WATER WELL RULES, REGULATIONS

AND STANDARDS

STATE OF LOUISIANA

Prepared
By

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DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

OFFICE OF PUBLIC WORKS

NOVEMBER 1985

FOREWORD

Today, more than one-half of the population of the State of Louisiana is dependent upon ground water for their drinking, cooking, washing, and sanitary uses. Knowledge of the occurrence and the protection of this valuable resource is not only essential for the economic development, but is vital to the future of the State.

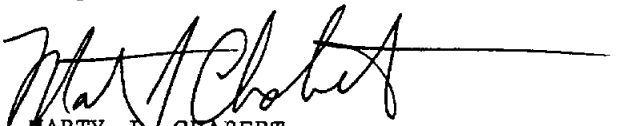
In 1972, the Louisiana Legislature declared the utilization of ground water resources to be a matter of public interest and enacted Act 535 which provided for the development of rules and regulations for water well registration, construction, and plugging and sealing of abandoned wells and holes. In 1976, the Legislature enacted Act 606 which required installation of control devices on free-flowing water wells. In 1980, the Water Well Contractor's (Driller's) Licensing Act was passed and in 1984, it was amended by Act 313 to require the licensing of those desiring to engage in the business of drilling water wells, monitoring wells, geotechnical boreholes, heat pump wells, as well as reworking water wells and plugging abandoned water wells and holes.

The purpose of the rules, regulations and procedures, stated herein, is to implement the above-cited legislative directives and to ensure the wise use of and the protection of the State's ground water resources.

Although these regulations are now considered final, the Department recognizes that revisions or modifications may be required in recognition of changes in technology or to accommodate local hydrologic variations. Such revisions or variances will be effected when found to be necessary.

The cooperation of the well owners, the drilling contractors, municipal and police jury associations, water districts, business and industries, federal and state agencies, and the public is requested and needed for successful implementation of these rules and regulations and to provide the people of Louisiana assurance that our ground water resources will, for many generations, be the State's most important and viable resource.

Thank you for your assistance and cooperation.



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WATER WELL RULES, REGULATIONS AND STANDARDS STATE OF LOUISIANA

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Office of the Secretary
Office of Preventive and Public Health Services

Louisiana Department of Environmental Quality,
Office of Solid and Hazardous Waste

Louisiana Association of Business and Industry

Louisiana Engineering Society

Louisiana Farm Bureau Federation, Inc.

Louisiana Municipal Association

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Mid-Continent Oil and Gas Association

National Water Well Association

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CHAPTER I

RULES, REGULATIONS AND PROCEDURES

FOR REGISTERING WATER WELLS AND HOLES

As announced in the October 1985 issue of the LOUISIANA REGISTER, the Rules, Regulations and Procedures, stated herein, were prepared by the Louisiana Department of Transportation and Development, Office of Public Works, hereafter referred to as "Department", which is responsible for registering water wells and holes in Louisiana in accordance with R.S. 38:3091 through 38:3098.8.

The Rules, Regulations and Procedures, stated herein, became effective on November 1, 1985 and preempted the Rules, Regulations and Procedures which had been in effect since July 1, 1975.

SECTION 1.1.0.0.

PURPOSE

The purpose of the Rules, Regulations and Procedures for Registering Water Wells and Holes, stated herein, is to ensure that water wells and holes are properly constructed; to collect, catalog and store water well construction and drilling data; and to gather data on water resources of the state. The data obtained from the registration forms are stored on computer files and are readily available for use by hydrologists, engineers, geologists, drillers and others who are involved in the administration, development, protection, and the wise use of the ground water resources of the state.

SECTION 1.2.0.0

REGISTRATION OF WATER WELLS AND HOLES

COMPLETED ON OR AFTER NOVEMBER 1, 1985

A) The contractor who drills or constructs a well or hole on or after November 1, 1985 shall be responsible for registering that well or hole by submitting to the Department a completed Water Well Registration Form within thirty (30) calendar days after completing such well or hole. Registration requirements shall apply to all water wells, regardless of yield or use, including but not limited to, public supply, domestic, irrigation/agriculture, power generation, rig-supply, observation, dewatering, monitoring, and heat pump supply wells, as well as test holes, abandoned pilot holes, and heat pump holes. For glossary of terms, refer to Appendix I.

SECTION 1.2.1.0

Exemption From Registration. The following wells and holes shall be exempt from registration requirements:

- Wells producing saline water in connection with oil or gas production
- Driven wells or wells dug by use of hand auger.
- Geotechnical boreholes

SECTION 1.2.2.0.

Water Well Registration Long Form (DOTD-GW-1). Water Well Registration Long Form (DOTD-GW-1) shall be used to register the following types of wells and holes:

- Community public supply wells
- Non-community public supply wells

- Industrial wells
- Irrigation/agricultural wells
- Power generation wells
- Observation wells
- Dewatering wells
- Test holes

A sample copy of the long form and instructions for completing the form are included in Appendix II.

SECTION 1.2.3.0.

Water Well Registration Short Form (DOTD-GW-1S). Water Well Registration Short Form (DOTD-GW-1S) shall be used to register the following types of wells and holes:

- Domestic wells
- Rig-supply wells
- Monitoring wells
- Heat pump supply wells
- Heat pump holes (closed loop system)
- Abandoned pilot holes

A sample copy of the short form and instructions for completing the form are included in Appendix III.

SECTION 1.2.4.0.

Submission of Water Well Registration Forms.

A) The contractor who drills a well or hole shall complete and submit to the Department the original copy of the Water Well Registration Form within thirty (30) calendar days after each well or hole has been

completed. The owner's copy shall be sent to the owner immediately after completion of the work and the contractor shall retain the contractor's copy for his files.

For registration purposes only, the Department considers a well or hole completed when it is accepted by the owner or when the contractor has moved his equipment from the site, whichever comes first. Acceptance by the owner or removal of equipment from the site by the contractor does not imply, in any way, acceptance or approval by the State of Louisiana. The Department, after inspection of the site and records, can cause the owner and/or the contractor to do whatever additional work is necessary to bring the well or hole up to standards stated in Chapter II. The expense for the additional work shall be borne by the owner and/or the contractor, as the case may be.

B) For the purpose of registering heat pump holes only, one form (DOTD-GW-1S) per project (site) will suffice. Under item marked "remarks", materials and method used to seal the holes shall be indicated. Description of cuttings, required by Item 12, should be the typical formations encountered at the site.

C) Registration forms may be submitted to the Department on a monthly basis as long as the 30-day limitation is not exceeded. Forms that are illegible, have incomplete items, lack a sketch or directions to the well, or have not been signed and dated will be rejected by the Department and will be returned to the contractor for correction and resubmittal. It is the responsibility of the contractor to see to it that the submitted registration forms are actually received by the Department.

D) Each registration form shall be personally signed and dated by the contractor who is responsible for drilling the well or hole. For convenience of the contractor, affidavits filed by the contractor to authorize office personnel to sign forms on his behalf will be accepted by the Department.

E) Upon receipt of the registration forms, the Department will review and process each form, including field inspection, if necessary, and will assign an identification number to each well after which the well is considered registered. The well data will then be entered into the computerized data file and, upon request, the owner and/or the contractor will be informed of the fact of registration and of the assigned identification number.

SECTION 1.2.5.0.

Copies of Available Data Which Shall be Attached to Registration Forms. The water well contractor who is responsible for drilling a public supply, industrial or power generation water well or test hole, shall attach to the registration form copies of the following items (if available) for transmittal to the Department

- Electrical log or other borehole geophysical log
- Mechanical analysis of the drill cuttings
- Chemical analysis of the water
- Aquifer test results

SECTION 1.2.6.0.

Registration of Reworked Water Wells.

A) Registered wells that are reworked (e.g., removing and replacing the screen; redeveloping the well) need not be registered a second time unless the screen setting is altered or a liner is installed inside the original casing. If the registered well, after reworking, obtains water from an aquifer different from that reported on the original registration form, another registration form shall be submitted by the contractor within thirty (30) calendar days after completion of the work.

B) If an unregistered well is reworked, deepened or changed in any manner or if screen setting is altered, the proper registration form (either DOTD-GW-1 or DOTD-GW-1S) shall be submitted to the Department by the contractor no later than thirty (30) calendar days after the work has been completed.

SECTION 1.2.7.0.

Registration of Sub-Contracted Water Wells. When a water well contractor agrees to construct a water well for a customer but subcontracts the work to another water well contractor, the following registration procedure shall govern:

The sub-contractor who drills the well shall keep an accurate record of the pertinent data to be used in completing the registration form; however, the name and license number of the original contractor must be shown on the upper right-hand corner of the registration form, and it is the original contractor who is responsible for signing and transmitting the form to the Department in

accordance with the procedures outlined in Section 1.2.0.0. The sub-contractor may write his or his company's name and license number at the space designated for "remarks".

SECTION 1.2.8.0.

Registration of Rig-Supply Water Wells. In order to register a rig-supply water well, each registration form must be accompanied by a copy of the "registered" permit plat reflecting the section, township, range and the distances from the section lines to the location of the well (oil, gas, injection, etc.). The plat will be used by the Department to determine the latitude and longitude of the well which will then become the identification number for that rig supply water well. The water well contractor who drilled the water well shall obtain a copy of the plat from the company in charge of the drilling of the oil or gas well (lessee) or from the operator of the oil or gas drilling rig and shall attach it to the registration form for transmittal to the Department. Alternatively, the water well contractor may send the registration form to the lessee with appropriate instructions for them to attach the plat to the registration form and transmit it to the Department.

The lessee or the operator shall furnish the water well contractor with the required plat in a timely manner so that the 30-day limitation for water well registration is not exceeded.

SECTION 1.2.9.0.

Registration of Monitoring Wells. Although construction of monitoring wells for facilities regulated by the Department of Environmental Quality (DEQ) requires approval from that Department prior to construction, they shall be registered with the Department of Transportation and Development, like all

other water wells, as part of the state's effort to catalog well sites and to collect and provide data on the geohydrological system. In order to register a monitoring well, the drilling contractor, in addition to completing all items on Water Well Registration Short Form (DOTD-GW-1S), must also complete the spaces provided for the latitude and longitude of the well location, as well as the section, township and range. The latitude and longitude of the well, which can be determined from the appropriate quadrangle map, is used as the identification number (column 12 to 26) for that monitoring well. Column 26 is used to indicate number of registered wells located within the same latitude and longitude (within 100 feet).

SECTION 1.3.0.0

REGISTRATION OF WATER WELLS

COMPLETED PRIOR TO NOVEMBER 1, 1985

Because many water wells have already been inventoried by the Department, the procedures for registering wells completed prior to November 1, 1985 are dependent on whether or not the wells have been inventoried and their records are available to the Department.

SECTION 1.3.1.0

Registration of Inventoried Water Wells Completed Prior to November 1, 1985 Whose Records Are Available to the Department. The Department will obtain from available data a listing, by owner, of wells and pertinent data. A copy of the list will either be sent to the owner for checking and updating, or will be checked and updated by a representative of the Department with assistance from the owner.

A) If the list is sent to the owner for checking and updating, the owner shall be responsible for updating the list by indicating the current status of each registered well, by adding wells not on the list, and by indicating wells that have been abandoned. The owner shall then certify the list as current and correct and shall return the list to the Department within thirty (30) calendar days after receiving the list. When the corrected and certified list is received by the Department, the wells added to the list by the owner shall be inventoried and registered by a representative of the Department.

B) If, in the opinion of the Department, a visit or telephone contact by a representative of the Department is preferable and more convenient to the owner than sending a list of wells, a field visit or telephone contact will be made by a representative of the Department. After the data are verified and the well locations are checked, any well not on the list will be inventoried and registered by the representative of the Department.

Upon request, the owner will be sent an updated listing of registered wells for which he is responsible.

SECTION 1.3.2.0

Registration of Water Wells Completed Prior to November 1, 1985 Which Have Not Been Inventoried and Whose Records Are Not Available to the Department.

A) All wells used to supply a public water system, regardless of yield, and all other water wells capable of producing more than 50,000 gallons per day, which were constructed on or after July 1, 1975, shall be registered by the owner by completing a water well

registration long form (DOTD GW-1) for each well and sending them to the Department for verification and registration within ninety (90) calendar days after the effective date of these regulations.

B) The owner may register any uninventoried water well, not covered under item A, by completing an appropriate registration form and sending it to the Department for verification and registration.

C) The Department's representative may contact the owner to obtain well data and check and verify the location of wells that have not been inventoried and whose records are not on file with the Department. After receiving the pertinent data and locating the wells, the Department will register the wells accordingly.

The owner shall make available any needed data for registering uninventoried wells and shall permit access to the well sites. Upon request, the owner will be informed of the fact of registration and of the assigned identification number.

SECTION 1.4.0.0.

USE OF INFORMATION OBTAINED FROM REGISTRATION FORMS

Information obtained from registration forms will be available to all persons upon request. The well data will be coded and entered into the Department's computerized data file and will be integrated with water well data systems operated by other governmental agencies and research groups, as needed. Copies of the registration forms or computerized listings of the registered wells should fulfill the need of water districts, commissions or other state agencies; thus eliminating the need for a second set of registration forms.

SECTION 1.5.0.0

ENFORCEMENT ACTIONS

Provisions addressing enforcement of this Chapter appear in Louisiana Revised Statute 38:3096, as follows:

A) Whoever knowingly and willingly violates a provision of this chapter, or a rule, regulation or order of the director or a board hereunder, shall be subject to a civil penalty of not more than One Thousand Dollars a day for each day of violation and for each act of violation if a penalty for the violation is not otherwise provided in this chapter.

   (1) The place of suit to recover this penalty shall be selected by the director or board, as may be appropriate, in the district court of the parish in which any one of the defendants resides, or in the district court of the parish where the violation took place.

   (2) Suit shall be at the direction of the director or board, as may be appropriate, and shall be instituted and conducted in his or its name by the Attorney General or by the District Attorney of the district under the direction of the Attorney General.

B) Whoever knowingly and willfully aids or abets a person in the violation of a provision of this chapter, or in any rule, regulation or order made hereunder shall be subject to the same penalties provided herein for the principal violator.

SECTION 1.5.1.0.

Falsification of Documents. Falsification of documents to evade regulations, as well as penalties for said falsifications, appears in Louisiana Revised Statute 38:3095 as follows:

A) No person shall, for the purpose of evading this chapter or any rule, regulation or order made thereunder:

(1) Make, or cause to be made, any false entry or statement of fact in any report required to be made by this chapter, or by any rule, regulation or order made hereunder; or

(2) Make, or cause to be made, any false entry in an account, record or memorandum kept by any person in connection with the provisions of this chapter or of any rule, regulations or order made thereunder; or

(3) Remove out of the jurisdiction of the state or destroy or mutilate, alter, or by any other means, falsify any book, record, or of the paper pertaining to the matters regulated by this chapter, or by any rule, regulation or order made thereunder.

B) Whoever violates this section shall be fined not more than Five Thousand Dollars or imprisoned not more than six months or both.

The penalty provision for falsification of documents required under the provisions of this chapter are therefore criminal in nature and will be enforced through the district attorney having jurisdiction where said violation occurs. It should also be noted that utilization of the United States Mail in the falsification of documents constitutes a violation of Title 18 of the United States Code (Mail Fraud), and such violations will be referred to the appropriate United States Attorney.

SECTION 1.5.2.0.

Appeals. An alleged violator may appeal any order of the Department by requesting a hearing. The hearing request must be made to the Department, in writing, within thirty (30) calendar days of the original order and must be sent by "Certified Mail -- Return Receipt Requested". After receiving the request, the Department will arrange a hearing to determine what other remedial action will serve to effect compliance with the rules and regulations.

CHAPTER II

RULES, REGULATIONS AND STANDARDS FOR WATER WELL CONSTRUCTION

As announced in the October 1985 issue of the LOUISIANA REGISTER, the Rules, Regulations and Standards for constructing Water Wells and Holes were prepared by the Louisiana Department of Transportation and Development, Office of Public Works, hereafter referred to as the "Department", in accordance with R.S. 38:3091 through 38:3098.8. The Rules, Regulations and Standards stated herein became effective on November 1, 1985 and preempted the Rules, Regulations and Standards for Water Well Construction which had been in effect since December 20, 1975.

SECTION 2.1.0.0

PURPOSE

The purpose of the Rules, Regulations, and Standards stated herein is to minimize the chances of contaminating the state's ground water resources via improperly constructed water wells and holes and to minimize health and safety hazards associated with construction of wells and holes. The Rules, Regulations and Standards shall apply to all water wells and holes, including but not limited to, public supply, domestic, irrigation/agriculture, industrial, power generation, rig-supply, observation, dewatering, monitoring, and heat pump supply, as well as pilot holes, test holes, geotechnical boreholes and heat pump holes (closed loop system). For glossary of terms, refer to Appendix I.

SECTION 2.2.0.0

GENERAL RULES AND REGULATIONS

SECTION 2.2.1.0

Approval of Plans and Specifications for Public Water Supply Systems.

A) Louisiana Revised Statute 38:3094, paragraph (3) of subsection A, authorizes the Department to:

> "Establish regulations governing standards for the construction of all water wells drilled after the effective date of this Act . . ."
>
> Louisiana Revised Statute 40:4, paragraph (8) of subsection A of Section 4 (Sanitary Code) states:
>
> "In order to protect the public against disease from water supplied for drinking, culinary, and abutionary purposes, the State Health Officer shall prepare and promulgate all rules and regulations necessary to insure that water supplied to the public by public water supplies is obtained from safe and sanitary sources and that such sources are properly protected; is treated, stored and conveyed in a safe and sanitary manner; and is safe and potable for human use . . ."

In accordance with these legislative directives, the Rules, Regulations and Standards governing construction of public supply water wells were prepared by the Department in close cooperation with the Louisiana Department of Health and Human Resources, Office of Preventive and Public Health Services, and they are intended to eliminate duplication of efforts and requirements by the two agencies, thereby minimizing cost and optimizing operating efficiencies.

B) Chapter XII of the State Sanitary Code requires that no public water supply shall be constructed, operated or modified without review and approval of the State Health Officer. Detailed plans and specifications shall be submitted in duplicate to the Department of Health and Human Resources, Office of Preventive and Public Health Services, P.O. Box 60630, New Orleans, Louisiana 70160, by the person

having responsible charge of a municipally owned water supply or by the owner of a privately owned public water supply for review and approval before construction, modification, or operation of such system has commenced.

C) The water well contractor shall construct the well in accordance with the applicable provisions of this chapter and shall submit a Water Well Registration Long Form (DOTD-GW-1) to the Department within thirty (30) calendar days after completing the well, as required by Section 1.2.0.0. of the Rules, Regulations and Procedures for Registering Water Wells and Holes.

D) All questions relating to the quality of water, as it pertains to its effect on human health, shall be referred by the owner, engineer or water well contractor to the following:

Department of Health and Human Resources
Office of Preventive and Public Health Services
P.O. Box 60630
New Orleans, Louisiana 70160
Phone: (504) 568-5100

SECTION 2.2.2.0.

Licensing Requirements. The following wells and holes shall be drilled or constructed by a licensed contractor (driller) who is duly licensed by the Department in accordance with the Rules and Regulations stated in Chapter V:

- All water wells, regardless of use or type
- Monitoring wells
- Heat pump wells and holes
- Geotechnical boreholes
- Test holes and pilot holes

Additionally, reworking of water wells, as well as plugging and abandoning wells and holes, excluding oil and gas wells, shall also be undertaken by a licensed contractor.

SECTION 2.2.3.0.

Registration Requirements. Every water well or hole drilled in the State of Louisiana shall be registered with the Department in accordance with the requirements of Chapters I.

SECTION 2.2.4.0.

Variance Requests. Requests to vary from the Rules, Regulations and Standards for Constructing Water Wells and Holes shall be addressed to the Department as follows:

Department of Transportation and Development
ATTN: Chief, Water Resources Section
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245
Phone: (504) 379-1434

The request must demonstrate that compliance is impractical and must outline a satisfactory alternative. The Department may prescribe, in writing, alternate requirements that are equivalent to the regulations and standards stated herein relating to the protection of aquifer and prevention of ground water contamination.

Requests to vary from the provisions of the State Sanitary Code relating to the sanitary features of the public supply water systems, and for questions related to the quality of water as it pertains to human health, shall be addressed to the following:

Department of Health and Human Resources
Office of Preventive and Public Health Services
P.O. Box 60630
New Orleans, Louisiana 70160
Phone: (504) 568-5100

SECTION 2.2.5.0.

Minimum Distance Requirements for Locating a Water Well. Provided that all other applicable rules and regulations are complied with, the minimum distance requirements for locating a water well shall be in accordance with the following sections:

SECTION 2.2.5.1.

Location in Relation to Possible Sources of Contamination. The horizontal distance between any water well and any possible sources of contamination shall be as great as possible but in no case less than the following minimum distances:

POSSIBLE SOURCES OF CONTAMINATION	MINIMUM DISTANCE (in feet)
Septic Tanks	50
Storm or Sanitary Sewer	50 1/
Cesspools, outdoor privies, oxidation ponds, subsurface absorption fields, pits, etc.	100 2/
Sanitary landfills, feed lots, manure piles, solid-waste dumps and similar installations	100
Another water well	25 3/
Drainage canal, ditch or stream	50 4/

1/ This distance may be reduced to 30 feet if the sewer is of cast iron with leaded joints or Schedule 40 plastic pipe with water-tight joints.

2/ For domestic water wells, this distance may be reduced to fifty (50) feet.

3/ This minimum distance requirement does not take into consideration the effects of interference from pumping nearby wells in the same aquifer.

4/ Horizontally measured from the water edge to the well at the highest water level which may have occurred in a ten-year period.

SECTION 2.2.5.2.

Location in Relation to Levees.

A) Wells shall not be drilled within 250 feet of the levees (R.S. 38:225, Subsection 6). The Department interprets this statute to mean that the well or wells shall be at least 250 feet from the land side toe of the levee.

B) When wells are to be drilled within 1,500 feet of any state or federal flood control levee or structure, the owner or driller must first obtain permission from the appropriate levee board. The Corps of Engineers requires that drilling commence and casing be set and cemented in place to a specified depth while the stage of the Mississippi River is below +11.0 feet National Geodetic Vertical Datum (NGVD) on the Carrollton Gage, New Orleans, Louisiana, unless a waiver to this restriction is granted. Requests to vary from their requirements must be sent to the appropriate levee board and the Corps of Engineers. For specific information concerning river stages and drilling wells near levees, the owner, engineer or water well contractor should contact the following:

U.S. Army, Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, LA 70160
Phone: (504) 862-2204

U.S. Army, Corps of Engineers
Vicksburg District
P.O. Box 60
Vicksburg, MS 39180-0060
Phone: (601) 634-5000

SECTION 2.2.5.3.

Location in Relation to Flood Water. Locations subject to flooding should be avoided, if possible. If a reasonable alternate site does not exist, the well may be constructed in flood-prone areas provided the top of

the casing is at least two (2) feet above the highest flood level which may have occurred in a ten-year period but in no case less than two (2) feet above the ground surface.

Well piping shall be constructed with a check valve or other appropriate apparatus to prevent introduction of surface water into the casing in the event of damage to the external piping or pressure tanks.

All rig-supply water wells must be properly capped between the time the well is completed and the time the well is put into water production at the site. The cap shall be watertight and securely attached to prevent easy entry by other than the owner and to prevent the introduction of flood waters or contaminants into the well.

Flood information may be obtained from the Department, the U.S. Geological Survey or the administering agency of the Federal Insurance Program (i.e., municipality, police jury, regional planning authorities, or the Department of Urban and Community Affairs).

SECTION 2.2.5.4.

Location in Relation to Buildings. A well shall be located far enough from a building to allow reworking or rehabilitation with a drilling rig. A well shall not be located below ground surface, such as in pits and basements, and shall not be located within the foundation of a building, except a building constructed solely to house pumping and water system equipment.

SECTION 2.3.0.0

DRILLING AND CONSTRUCTION

A) Geologic conditions in Louisiana permit the use of two methods of drilling: the rotary method and reverse circulation method. Regardless of the method used, every precaution should be taken to prevent ground water contamination during drilling operations.

B) Water used in drilling operations shall be potable or chlorinated to prevent contamination of water-bearing formations.

C) When drilling a hole the contractor shall:

- Record the hole diameter and any changes in size of hole,
- Record (driller's log) the depth and thickness of the formations penetrated,
- Record any unusual occurrences, such as loss of circulation, cave-ins, et.., and
- Collect representative samples (drill cuttings) from each potential aquifer.

D) The contractor shall properly maintain all materials, tools, and drilling equipment and shall take all measures necessary to minimize health and safety hazards and to prevent movement of surface water and contaminants into the drilled hole or well.

E) An approved portable toilet shall be located at the drilling site if other restroom facilities are not available.

F) The mud pit shall be so constructed and maintained as to minimize the contamination of the drilling mud.

G) During a temporary shutdown for more than 24 hours, safeguards shall be taken to prevent possible contamination and damage. The well or hole shall be covered or capped to prevent entry by other than the contractor; it shall be clearly marked, and shall not be a safety hazard.

SECTION 2.3.1.0.

Alignment and Plumbness. The hole shall be drilled reasonably straight and plumb in order to:

- Avoid encroachment on neighboring property,
- Prevent intersection with other wells and holes,
- Prevent damage to screen while being set,
- Prevent damage to pumping equipment, and
- Allow for lowering the pump to the desired depth.

The contractor shall exercise reasonable care to ensure that the hole and the well are reasonably straight and plumb. Testing for plumbness and alignment are described in Section 8 and Appendix C of the current "American Water Works Association Standards for Water Wells" (AWWA A-100), as well as in Article 51 of the United States Environmental Protection Agency's "Manual of Water Well Construction Practices".

SECTION 2.3.2.0.

Drilling of Test Holes and Pilot Holes. A test hole is usually drilled to the base of the fresh water or to the bottom of the sand to be tested. Test holes are drilled primarily to:

- Determine the exact depth and thickness of the fresh-water bearing sands (aquifers),
- Collect drill cuttings for determining screen slot openings and the best location for the screen, and

- Collect quality and quantity of water data that can be used to design the well and select a pump and motor.

During the drilling operation, the contractor shall take the necessary precautions to prevent the contamination of any aquifer and the exchange of waters between aquifers.

When the drilling of a pilot hole or a test hole is temporarily suspended and the rig moves away from the drilling site, the hole shall be considered an abandoned hole unless drilling operations are resumed within thirty (30) calendar days of the initial date of suspension of drilling or an extension, in writing, is granted by the Department. During the "shut down" period, a mud column of sufficient weight and height shall be maintained in the hole at all times to prevent seepage of surface water and foreign materials into any aquifer and to prevent inter-aquifer movement of water. Additionally, the hole shall be capped and the immediate area shall be conspicuously marked to protect and warn the public. The cap shall be sufficiently strong and anchored to prevent easy and unintentional entry.

If the drilled test hole is deeper than the interval to be tested, the contractor shall use cement-bentonite slurry to set a plug extending from the bottom of the hole upward to a depth within twenty (20) feet of the bottom of the proposed screen setting or to the top of clay or shale layer underlying the sand to be tested. A sufficient period of time shall be allotted for the cement to set before development begins. If sands were not penetrated below the bottom of the sand to be screened, heavy drilling mud or bentonite slurry may be used in lieu of cement-bentonite slurry to plug the bottom of the hole.

If another aquifer at a shallower depth is to be tested, the contractor shall use cement-bentonite slurry to set a plug extending upward from the top of the plug, previously placed in the bottom of the hole, to within twenty

(20) feet of the depth where the bottom of the test screen is to be set in the shallower aquifer, or to the top of the clay or shale layer underlying the shallower sand to be tested.

Abandoned pilot holes and test holes shall be plugged in accordance with requirements of Sections 3.6.4.1. and 3.6.4.2., respectively.

SECTION 2.3.3.0.

Drilling of Heat Pump Holes (Closed Loop-System).

A) Heat pump holes shall be constructed in accordance with the pertinent provisions of this chapter in order to protect fresh-water aquifers from surface contamination and to prevent movement of water of objectionable quality from one aquifer to another.

B) Piping, casing or tubing materials shall conform to the applicable ASTM standards for polyvinyl chloride (PVC), polyethylene (PE), or polybutylene (PB) plastics and shall be installed and joined according to manufacturer's recommendations.

C) If used, antifreeze compounds shall be non-toxic and approved for use by the U.S. Environmental Protection Agency.

D) The entire depth of the closed loop heat pump holes shall be sealed in accordance with requirements of Section 3.6.4.4. within thirty (30) calendar days after completion of drilling operations.

E) Service manifold should be protected from external forces as recommended by the manufacturer, designer and/or local building codes.

SECTION 2.3.4.0.

Drilling of Monitoring Wells.

A) Monitoring wells shall be constructed in accordance with the pertinent provisions of this chapter in order to protect fresh-water aquifers from surface contamination and to prevent movement of water of objectionable quality from one aquifer to another.

B) To prevent the introduction of extraneous compounds into the formation water, the use of drilling mud in the monitoring wells is discouraged.

C) Monitoring wells shall be cased and the casing shall be strong enough to resist the forces imposed during and after installation, including reaction upon the casing by natural or foreign constituents or contamination.

D) The entire annular space of the monitoring wells shall be sealed with cement-bentonite slurry, unless specified otherwise by the Department of Environmental Quality (DEQ). Prior to cementing, flushing of the annular space with water will be necessary when obstructions are present or suspected. Coarse ground bentonite or bentonite pellets shall be placed between the sand pack and the cement-bentonite slurry. The ground surface around the well shall be covered with a concrete slab at least four (4) inches thick, extending at least two and one-half (2 1/2) feet from the well in all directions. The surface of the slab shall be sloped to drain away from the well.

E) Monitoring wells shall be covered with a protective cover or cap.

F) Abandoned monitoring wells shall be plugged in accordance with requirements of Section 3.6.2.0.

NOTE: CONSTRUCTION OF MONITORING WELLS FOR FACILITIES REGULATED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) REQUIRES APPROVAL FROM THAT DEPARTMENT PRIOR TO CONSTRUCTION.

SECTION 2.3.5.0.

Drilling of Geotechnical Boreholes.

A) Boreholes shall be drilled in accordance with pertinent provisions of this chapter in order to protect the fresh-water aquifers from surface contamination and to prevent movement of water of objectionable quality from one aquifer to another.

B) Geotechnical boreholes shall be plugged in accordance with requirements of Section 3.6.4.3. within thirty (30) calendar days after the termination of drilling and sampling operations.

NOTE: DRILLING OF GEOTECHNICAL BOREHOLES FOR FACILITIES REGULATED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) REQUIRE SPECIAL CONSIDERATION BY THAT DEPARTMENT.

SECTION 2.3.6.0.

Reworking of Water Wells

A) Rehabilitation or modification of water wells shall be accomplished in accordance with the provisions of this chapter of the Rules, Regulations and Standards for Water Well Drilling in order to protect the fresh-water aquifers from contamination.

The following operations shall be considered as reworking water wells and shall require a water well contractor's license.

- Removing and replacing screen
- Replacing gravel pack around screen
- Placing a new screen within the old screen

- Placing a liner pipe within the old casing
- Redeveloping a well by surging, acidizing, jetting, etc.

When a well is reworked or the sanitary seal is removed, the drop pipe, jet line or column pipe, pump/motor, etc. shall be cleaned and the well shall be disinfected in accordance with Chapter XII of the State Sanitary Code.

SECTION 2.4.0.0.

CASING

An appropriate casing shall be installed in every water well to prevent the wall of the hole from collapsing, to house the pump, and to convey the water to the surface.

SECTION 2.4.1.0.

General Criteria. The selection of casing is dependent upon a number of factors that shall be considered when designing and installing a well. Following are some of the factors:

A) The casing shall be strong enough to resist the forces imposed during installation and other forces that can be expected after installation.

B) The casing shall be of adequate diameter to accommodate the pump and convey the required quantity of water.

C) Joints of metal casing shall have threaded couplings or be welded to ensure water tightness for the entire length of the casing.

D) The casing shall be reasonably plumb and straight. The plumbness and alignment of the casing shall be checked in accordance with accepted practices (See Section 2.3.1.0.)

E) The casing shall be installed so as to seal off water-bearing formations that contain undesirable water and to prevent water from the surface and other aquifers from entering the well.

SECTION 2.4.2.0.

Materials. The casing materials commonly used in Louisiana are metal and plastic. Concrete, clay tile, wood, fiberglass, and other synthetic casings have been used in the past in some areas for specific applications.

SECTION 2.4.2.1.

Metal Casing. Steel is the material most frequently used for well casing in drilled wells. The three principal classifications of steel used for water well casing are as follows:

A) Standard and Line Pipe. This material shall meet one of the following standard specifications, including the latest revision thereof:

1. API Spec. 5A, "Specifications for Casing, Tubing and Drill Pipe.".
2. API Spec. 5L, "Specifications for Line Pipe."
3. API Spec. 5LX, "Specifications for High-Test Line Pipe."
4. ASTM A53, "Specifications for Pipe, Steel, Black and Hot Dipped, Zinc-Coated, Welded and Seamless Steel Pipe."
5. ASTM A120, "Standard Specifications for Pipe, Steel, Black and Hot Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses."
6. ASTM A134, "Standard Specifications for Pipe Steel, Fusion (Arc) - Welded Steel Pipe (Sizes NPS 16 and over)."
7. ASTM A135, "Standard Specifications for Electric-Resistant Steel Pipe."
8. ASTM A139,"Standard Specifications for Electric-Fusion (Arc)-Welded Steel Pipe (Sizes 4 inches and over)

9. ASTM A211, "Standard Specifications for Spiral-Welded Steel or Iron Pipe."

10. AWWA C201, "AWWA Standard for Fabricated Electrically Welded Steel Pipe."

11. AWWA C202, "Tentative Standard for Mill Type Steel Water Pipe."

12. Underwriters Laboratories Standard 888.

B) Structural Steel. This material shall meet one of the following specifications of the American Society for Testing and Material, including latest revision thereof:

1. ASTM A36, "Standard Specification for Structural Steel."

2. ASTM A242, "Standard Specification for High-Strength Low-Alloy Structural Steel."

3. ASTM 570-79, "Standard Specifications for Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality."

4. ASTM A283, "Standard Specifications for Low and Intermediate Tensile Strength Carbon Steel Plates, Shapes and Bars."

5. ASTM A441, "Standard Specification for High-Strength Low-Alloy Structural Manganese Vanadium Steel."

(Abbreviations used are: API - American Petroleum Institute; ASTM - American Society for Testing and Materials; AWWA - American Water Works Association.)

C) High Strength Carbon Steel. At present, there is no standard specification concerning this material; however, products are marked whose chemical and physical properties are similar. The material shall contain mill markings which will identify the manufacturer and specify that the material is well casing steel that complies with the chemical and physical properties as published by the manufacturer.

SECTION 2.4.2.2.

Plastic Casing. Thermoplastic well casing pipe may be used for well construction if it complies with the requirements and restrictions of this section.

A) Pipe and Material Specifications:

1. The thermoplastic well casing pipe and couplings shall be new polyvinyl chloride (PVC) material produced in accordance with the current AWWA Standard A-100 and ASTM F-480 standard, except that the impact standards of the current ASTM D-2241 may be substituted.
2. PVC material shall be designated as PVC 1120 or PVC 1220 and shall include an ultra-violet degradation inhibitor in its formulation.
3. Solvent cement shall conform to the current ASTM D-2564 standard.
4. Pipe may be joined by threaded joints, integral bell pipe or one piece couplings. Solvent-weld tapered bell and spigot joints shall meet current ASTM specification D-2672.

B) Casing Wall Thickness and Diameters:

1. The pipe shall have a standard dimension ratio (SDR) of 26, 21, or 17, and shall be equivalent to at least Schedule 40 or 80, depending upon use, construction techniques, depths and strength requirements.
2. Casing collapse pressures recommended by the manufacturer shall not be exceeded in any phase of well construction. Due consideration shall be given to extreme conditions that may

result from the use of high density cement grouts, high pressure cement grouting and high temperature from the heat of hydration in cement grouts.

3. Where threaded joints are used, wall thickness shall not be less than the equivalent of Schedule 80.

C) Marking and Approval:

1. The well casing pipe and couplings shall be marked in accordance with the current ASTM F-480 standard.
2. The well casing pipe, couplings, cement, primer and other compounds shall be evaluated and approved for use as a well casing in potable water supplies by the National Sanitation Foundation (NSF) Testing Laboratories, Inc, P.O. Box 1468, Ann Arbor, Michigan 48106.
3. The pipe shall be marked with the nominal size standard dimension ratio or schedule, type of material, either the designation "PVC 1120" or "PVC 1220", the wording "well casing", designation "ASTM F-480", manufacturers name or trademark, and the NSF-WC designation.

D) Storage:

1. The pipe and couplings shall be stored in a manner to minimize exposure to ultraviolet radiation.
2. The pipe shall be stored in a manner to prevent deformation, sagging or bending.

E) Assembly and Installation:

1. Joining techniques, including procedures for cutting, joint cleaning and priming, application of solvent cement, assembly and hardening time for solvent cement joints, shall be in accordance with the manufacturer's recommendations, and/or ASTM Standard D2855.
2. The well casing shall not be subjected to excessive forces and it may not be driven, pushed or forced into the formation.
3. PVC casing may be used to any depth, provided that allowable head differential (AHD) and hydraulic collapse pressure resistance (HCPR) are not exceeded. The well casing diameter and SDR or schedule shall be selected based on Appendix "L" of AWWA Standard A-100 and/or the manufacturer's recommendations for collapse pressure under extreme conditions.
4. PVC casing shall not be allowed to support the weight of the pump/motor (excluding submersible and single-pipe jet pump) and its related piping. The pump/motor, etc. shall be supported on a concrete base provided therefor.
5. Exposed PVC casings shall be protected from ultra-violet degration by appropriate coatings as recommended by the manufacturer.

SECTION 2.4.3.0.

Height of Casing. Well casing shall project at least one (1) foot above ground level, pump-house floor, or the top of concrete slab. For wells in areas subject to flooding, refer to Section 2.2.5.3. The ground surface or concrete slab around the well shall be sloped to drain away from the well in all directions.

SECTION 2.5.0.0.

SCREEN

Every water well shall be provided with an appropriate screen. It shall be the responsibility of the driller to determine the type of screen required, screen material, slot openings, entrance velocity, screen length and setting, and whether or not the well is to be gravel packed.

SECTION 2.5.1.0.

Type of Screen. The type of screen used is governed by cost, the contractor's experience with handling a specific type of screen, water quality, length of screen required, proposed well yield, and the required structural strength of the screen. The screen selected shall be strong enough to withstand external pressures and vertical load due to the weight of drill stem used to set the screen and the casing above the screen, if set in one continuous string.

SECTION 2.5.2.0.

Screen Material. The type of screen material is generally dependent upon cost and the quality of water to be pumped. If the water contains a relatively high concentration of carbon dioxide, dissolved solids or hydrogen sulfide, corrosion-resistant materials should be used in the construction of

the screen. The screen should be made entirely of the same material, and the lap or extension pipe (for not less than 5 feet) above the screen and blank pipe, if used, should be made of the same material as the screen. The likelihood of corrosion and encrustation can also be decreased by maintaining the entrance velocity within acceptable limits, 0.1 foot per second or less (See Section 2.5.4.0.).

Among metal alloys available with varying degrees of corrosion resistance are the stainless steels which combine nickel and chromium with steel and the various copper-based alloys. Manufacturers can be expected to provide advice on the type of metal or metal alloys that should be used if supplied with the results of a water analysis. Non-metal screens made of polyvinyl chloride (PVC) have been used as an alternative when corrosive conditions exist.

In contrast to "corrosive waters", encrusting waters are usually alkaline, have excessive carbonate hardness and contain iron and/or manganese. Encrustation, which reduces the open area of the screen and the specific capacity of the well, is the deposition of undesirable material about the screen openings. Efficient well development, which will decrease excessive head losses or pressure differentials across the face of the screen, will minimize the precipitation of encrusting minerals.

SECTION 2.5.3.0.

Screen Slot Openings. The selection of the screen openings, which shall be based on the results of mechanical analysis of the formation samples collected during drilling, is dependent upon the percentage of material that will be allowed to pass through the openings in the development process. Generally, the percentage of material that will be permitted to pass through the screen openings is related to the intended use of the water. Although

proper screen selection and well development should eliminate the pumping of sand during normal operations, cyclic pumping and increased pumping rates sometimes cause a well to yield some sand. Sand pumping by wells used to supply public and domestic water systems cannot be tolerated, whereas some sand in water used for irrigation is generally acceptable. Other factors involved in the selection of the slot openings are the uniformity of the material, the uniformity coefficient, the type of overlying sediments and the desired entrance velocity (See Section 2.5.4.0.).

Properly designed slot openings should allow the water to flow freely from the formation into the pump area while preventing clogging and sanding.

SECTION 2.5.4.0.

Entrance Velocity. To minimize the potential for encrustation, corrosion and "sanding", the entrance velocity should not exceed 0.1 foot per second. The entrance velocity is calculated by dividing the yield expressed in cubic feet per second (gallons per minute divided by 448.8 equals cubic feet per second) by the total area of the screen openings in square feet. The total area of the screen openings is the area of the openings provided per foot of screen multiplied by the length of screen in feet. Most manufacturers provide tables listing the open area for screen diameter and slot openings.

SECTION 2.5.5.0.

Screen Length. The length of the screen is influenced by cost, aquifer thickness, desired well yield and the estimated pumping level. The screen length should represent a compromise between cost and well efficiency. Well yield is more effectively increased by increasing the length of the screen than by proportionally increasing the diameter.

SECTION 2.5.6.0.

Screen Setting. Installation of the screen should be based upon an evaluation of all data collected during drilling and a detailed interpretation of the driller's and geophysical logs, if available. Care should be exercised to avoid damaging any part of the screen and to ensure that the setting is correct.

SECTION 2.5.7.0.

Gravel Pack. If the interval to be screened consists of a fine uniform sand or consists of thin alternating layers of fine, medium and coarse sand, it may be desirable to gravel pack the screen. The objectives of gravel packing are to increase the permeability of the material in the zone immediately surrounding the screen, to minimize the chances of sand pumping, to reduce the entrance velocity at the face of the screen, to reduce the chances of error where a screen is set opposite alternating beds of sand of different grain size and clay, and to allow the installation of a small diameter screen in relatively thick aquifers.

If required, a properly graded gravel pack shall be selected based upon an evaluation of the sieve analysis for the sands in the formation. The uniformity coefficient (see glossary of terms) of the selected gravel pack material should be 2.5 or less. The gravel envelope, usually 3 to 8 inches thick, should consist of clean, well-rounded siliceous material that will permit the selection of screen openings that will retain 90 percent or more of the gravel pack material by size. Limestone and shale shall not be used as a gravel pack.

SECTION 2.5.8.0.

Formation Stabilization. If the hole drilled to accommodate the screen is much larger (four inches or more) than the diameter of the well screen, it is sometimes necessary to stabilize the extension pipe with a material such as sand or gravel to prevent caving or slumping of silt, sand, and clay from above the aquifer. Formation stabilization should not be confused with gravel packing. In contrast to gravel packing, the material used as the formation stabilizer is not specially graded. In addition, commercially available equipment, such as shale packers or metal-petal baskets, are commonly used to prevent sloughing or caving into the producing formation.

SECTION 2.6.0.0.

METHODS AND STANDARDS FOR CEMENTING THE ANNULAR SPACE

The methods and materials employed to cement the annular space between the well casing and the borehole generally depend upon 1) local geohydrologic conditions, and 2) type of well construction. The primary reasons for sealing, cementing or grouting the annular space are as follows:

- To protect the aquifer from surface contamination,
- To increase the life of the well by protecting the casing against exterior corrosion, and
- To prevent movement of water of objectionable quality from one aquifer to another.

SECTION 2.6.1.0.

Methods for Cementing the Annular Space. The following regulations shall apply to all water wells, regardless of use or type:

A) Annular space shall be sealed with cement-bentonite slurry, which is a mixture of cement, bentonite and water, consisting of not more than eight (8) percent bentonite by dry weight of the cement, and a maximum of ten (10) gallons of water per sack (94 pounds) of cement. Additives, in the approved and proper ratio, may be added to the slurry if required. If the slurry is to be prepared in the field, it is recommended that the bentonite be added after cement and water are thoroughly mixed.

Neat cement, which is a mixture of cement and water consisting of not more than five (5) gallons of water per sack (94 pounds) of cement, may be used in lieu of cement-bentonite slurry.

B) Cement-bentonite slurry shall be placed in the annular space in a continuous operation from bottom of the space to be cemented, up to the ground surface. Slurry shall be placed by the circulation or pump-down method unless specified otherwise. The pump-down method may include the "Halliburton" method, inner string cementing, or positive placement-exterior method. The selected method should ensure uniform coverage of slurry throughout the annular space.

C) A suitable cement retainer, packer, shale trap, boot or plug shall be secured to the casing at the appropriate depth to prevent leakage or migration of the slurry into the bottom of the well.

D) The cement-bentonite slurry shall fill a minimum annular space of 1 1/2 inches for 4-inch and smaller wells, and a minimum of 2 inches for 6-inch and larger wells. For cementing methods using a "tremie" or "grouting pipe" placed in the annular space, sufficient space should be provided to accommodate the tremie pipe.

E) If a conductor pipe is used, it shall be cemented in place and the annular space between the well casing and the conductor pipe shall be made watertight by grouting with cement-bentonite slurry from bottom of the conductor pipe to the ground surface.

F) If one or more sands between the ground surface and the production sand contain saline water and/or water of objectionable quality, the annular space between the well casing and the hole shall be sealed with cement-bentonite slurry, at a minimum, to a depth of not less than twenty feet below the deepest sand containing the water of objectionable quality unless full depth cementing is required by Section 2.6.2.0.

SECTION 2.6.2.0.

Standards for Cementing the Annular Space.

A) Community public supply wells shall be cemented to their full depth from the top of the producing aquifer to the ground surface.

B) Non-community public supply wells shall be cemented from a minimum depth of fifty (50) feet to the ground surface.

C) Industrial and power generation wells shall be cemented to their full depth from the top of the producing aquifer to the ground surface.

D) Observation wells shall be cemented from a minimum depth of fifty (50) feet to the ground surface.

E) Irrigation/agricultural wells shall be cemented from a minimum depth of ten (10) feet to the ground surface, using the pump-down or the gravity method with or without the tremie pipe.

F) Rig-supply wells shall be cemented from a minimum depth of fifty (50) feet to the ground surface.

G) Monitoring wells shall be cemented along the entire length of the casing unless specified otherwise by the Department of Environmental Quality.

H) Dewatering wells, other than drive-point type, shall be cemented from a minimum depth of fifty (50) feet to the ground surface.

I) Domestic wells shall be cemented from a minimum depth of ten (10) feet to the ground surface using the pump-down or the gravity method with or without the tremie pipe. A suitable cement retainer, such as a shale trap or boot, as required by Section 2.6.1.0. (C), shall be attached to the casing at the ten-foot minimum depth. The use of empty cement sacks in lieu of shale trap or boot shall not be allowed. A long metal rod shall be used to rod the cement slurry to ensure uniform coverage around the casing.

J) Heat pump supply wells for private homes shall be cemented in accordance with requirements for domestic wells; for apartment buildings and other commercial establishments, in accordance with requirements for non-community public supply wells, and for industrial plants, in accordance with requirements for industrial wells.

SECTION 2.7.0.0.

WELL DEVELOPMENT AND DISINFECTION

SECTION 2.7.1.0.

Purpose and Methods of Development. The principal purposes of well development are as follows:

- To remove silt, sand, drilling mud, and other materials that may retard the flow of water toward and into the well,

- To correct any damages to, or clogging of, the water bearing formation that may have occurred during drilling, and

- To stabilize the material around the screen so that the well will yield clear "sand free" water.

The following methods used in developing, redeveloping or conditioning a well are acceptable:

- Surging with a plunger or piston while jetting using air lift,

- Jetting with water, also known as crosswashing,

- Backwashing or surging by alternately starting and stopping the pump,

- Using chemicals designed for developing or redeveloping a well,

- Over-pumping.

The use of explosives is prohibited. Water used for well development shall be potable or chlorinated to prevent contamination of water-bearing formations.

SECTION 2.7.2.0.

Criteria for Development. A well should be developed at a yield of 1.5 times the proposed pumping rate and, if possible, it should continue until the observed specific capacity is the same, or nearly the same, as the theoretical specific capacity. Adequately developed wells should be "sand free" and should have fewer encrustation problems if the operating pumping rate is about two-thirds the developed rate, the entrance velocity is 0.1 foot per second or less, and the head differential across the face of the screen is at a minimum.

The acceptable amount of sand per unit volume should be between recommended ratios of one ounce of sand per 8,000 gallons of water (about 1 milligram per liter) and one ounce per 100 gallons of water (80 milligrams per liter), depending on the use of water. Because of the possibility of damage

by sand to plumbing fixtures and industrial equipment and products, the tolerance for sand in water used for public supply, domestic and most industrial purposes is low and should not exceed five (5) milligrams per liter. Many wells that are used for public water supply systems have an acceptable ratio of "no sand". The well owner should specify the acceptable limits of the "sand free" water with equal considertion given to the use of the water, the desired production rate, costs, and well development.

SECTION 2.7.2.1.

Development of Gravel-Packed Wells. The successful development of a gravel-packed well is dependent upon the grading of the gravel, the method of development, and thickness of the skin of the relatively impervious drilling mud filter cake which is "plastered" on the wall of the hole and is between the water-bearing formation, and the emplaced gravel. Because it concentrates energy in small areas, the jetting or cross washing method is usually the most effective in developing gravel-packed wells.

SECTION 2.7.2.2.

Chemicals Used in the Development Process. Glassy polyphosphate chemicals, if used strictly in accordance with the manufacturer's recommendation, will aid in the development or redevelopment process by reducing the gel-like properties of the drilling mud and by dispersing the clay particles that are on the sand grains.

The appropriate ratio of chemicals to water in the well is usually specified by the manufacturer. The mixture should be allowed to stand in the well for at least one hour, or the period of time recommended by the manufacturer of the chemical, before development starts. It should be noted that the polyphosphate should not be allowed to remain in the well for too

long (several days). If the chemicals converted to the glassy orthophosphate state, any clay in suspension could be deposited, perhaps out of reach of any further removal, resulting in permanent reduction in yield.

Chemicals used in the development process shall either meet the standards of the American Water Works Association or be approved for use by the U.S. Environmental Protection Agency (EPA).

SECTION 2.7.3.0.

Disinfection of Wells. All new wells and existing wells in which repair work has been done shall be disinfected before being put into use, in accordance with Chapter XII of the State Sanitary Code, if water is to be used for drinking, cooking or washing purposes. Negative bacteriological analysis of water, performed by the Department of Health and Human Resources (DHHR) or by a laboratory certified by the State Health Officer, shall be required for all public supply and domestic water wells.

SECTION 2.8.0.0.

STANDARDS FOR MISCELLANEOUS APPURTENANCES

SECTION 2.8.1.0.

Vent (Breather Pipe). Vents are required for all public supply water wells and are recommended for use on wells used for other purposes. Vents shall be so constructed and installed as to prevent the entrance of contaminants into the well. Vent openings shall be piped water-tight to a point at least two (2) feet above the highest flood level which may have occurred in a ten-year period, but in no case less than one (1) foot above the top of the well casing. Such vent openings and extensions thereof should not be less than one-half inch in diameter, with extension pipe firmly attached

thereto. The openings of the vent pipes shall be turned downward and screened to prevent the entrance of insects, foreign matter and other contaminants. Vents will not be required when single-pipe jet pumps are used.

SECTION 2.8.2.0.

Sampling Tap. All public supply and domestic water wells shall be provided with a readily accessible faucet or tap on the well discharge line at the well head for the collection of water samples. The faucet or tap shall be of the smooth nozzle type and turned downward.

SECTION 2.8.3.0.

Concrete Slab. When concrete slabs are placed around water wells at ground surface, they should be at least four (4) inches thick and extending at least two and one-half (2 1/2) feet from the well in all directions. The surface of the slab shall be sloped to drain away from the well. The top of the casing shall be at least one (1) foot above the top of the slab. Prior to the slab installation, the contractor shall seal the annular space in accordance with section 2.6.0.0. THE PLACEMENT OF A SLAB SHALL NOT BE CONSIDERED A SUBSTITUTE FOR THE PLACEMENT OF CEMENT-BENTONITE SLURRY IN THE ANNULAR SPACE BETWEEN THE HOLE AND THE CASING.

For wells where a slab is not provided, the ground surface surrounding the well shall be compacted and graded to drain water away from the well.

SECTION 2.8.4.0.

Sanitary Seals. A water-tight sanitary seal shall be installed at the top of the casing for all water wells to prevent the entrance of contaminated water or other objectionable material into the well. Sanitary seals shall be constructed of a durable material such as cast iron, steel, aluminum, high

impact plastic, neoprene, or a combination thereof. If a vent and/or an electrical conduit enter the well casing through the sanitary seal, the openings shall be made water-tight.

SECTION 2.8.5.0.

Pump/Motor Base. To prevent transmission of vibration to the well casing, all surface-mounted pumps/motors (excluding submersible and single-pipe jet pumps/motors) shall be supported by a concrete base, pier or foundation. The well casing shall not be used to support the weight of the surface-mounted pump/motor, except as noted above. Foundations may either be split pier type or solid pedestal type. For solid pedestal foundations, the well casing shall project at least one inch above the level of the foundation.

SECTION 2.9.0.0.

ENFORCEMENT ACTIONS

Provisions addressing enforcement of this Chapter appear in Louisiana Revised Statute 38:3096, as follows:

A) Whoever knowingly and willfully violates a provision of this chapter, or a rule, regulation, or order of the director or a board made hereunder, shall be subject to a civil penalty of not more than One Thousand Dollars a day for each day of violation and for each act of violation if a penalty for the violation is not otherwise provided in this chapter.

(1) The place of suit to recover this penalty shall be selected by the director or board, as may be appropriate, in the district court of the parish of the residence of any one of the defendants, or in the district court of the parish where the violation took place.

(2) Suit shall be at the direction of the director or board, as may be appropriate, and shall be instituted and conducted in his or its name by the Attorney General or by the District Attorney of the district under the direction of the Attorney General.

B) Whoever knowingly and willfully aids or abets a person in the violation of a provision of this chapter, or in any rule, regulation, or order made hereunder, shall be subject to the same penalties provided herein for the principal violator.

SECTION 2.9.1.0.

Falsification of Documents. Falsification of documents to evade regulations, as well as penalties for said falsifications, appears in Louisiana Revised Statute 38:3095, as follows:

A) No person shall, for the purpose of evading this chapter, or any rule, regulation, or order made thereunder:

(1) Make or cause to be made any false entry or statement of fact in any report required to be made by this chapter or by any rule, regulation, or order made hereunder; or

(2) Make or cause to be made any false entry in an account, record, or memorandum kept by any person in connection with the provisions of this chapter or of any rule, regulation, or order made thereunder; or

(3) Remove out of the jurisdiction of the State, or destroy or mutilate, alter, or by any other means falsify any book, record, or other paper pertaining to the matters regulated by this chapter or by any rule, regulation, or order made thereunder.

B) Whoever violates this section shall be fined not more than Five Thousand Dollars or imprisoned not more than six months or both.

The penalty provision for falsification of documents required under the provisions of this chapter are therefore criminal in nature and will be enforced through the District Attorney having jurisdiction where said violation occurs. It should also be noted that utilization of the United States Mail in the falsification of documents constitutes a violation of Title 18 of the United States Code (Mail Fraud), and such information will be referred to the appropriate United States Attorney.

SECTION 2.9.2.0.

Appeals. An alleged violator may appeal any order of the Department by requesting a hearing. The hearing request must be made to the Department, in writing, within thirty (30) calendar days of the original order and must be sent by "Certified Mail-Return Receipt Requested". After receiving the request, the Department will arrange a hearing to determine what other remedial action will serve to effect compliance with the rules and regulations.

CHAPTER III

RULES, REGULATIONS AND STANDARDS FOR PLUGGING ABANDONED WATER WELLS AND HOLES

As announced in the October 1985 issue of the LOUISIANA REGISTER, the Rules, Regulations and Standards, stated herein, were prepared by the Louisiana Department of Transportation and Development, Office of Public Works, hereafter referred to as the "Department", which is responsible for establishing rules, regulations and standards for plugging (sealing) of abandoned water wells and holes in Louisiana in accordance with R.S. 38:3091 through 38:3097.

The Rules, Regulations and Standards, stated herein, became effective on November 1, 1985 and preempted the Rules, Regulations, Standards and Methods for Plugging and Sealing of Abandoned Water Wells and Holes which had been in effect since September 1, 1975.

SECTION 3.1.0.0.

PURPOSE

The purpose of the Rules, Regulations and Standards for Plugging Abandoned Water Wells and Holes, stated herein, is to protect the ground water resources of the state from surface contamination, to prevent movement of water from one aquifer to another, to prevent the entrance of objectionable materials and wastes into aquifers via open or improperly sealed water wells and holes, and to minimize health and safety hazards associated with abandoned wells and holes.

SECTION 3.2.0.0.

GENERAL RULES AND REGULATIONS

In 1972, the Louisiana Legislature enacted State Act 535, which authorized the Department to promulgate reasonable rules and regulations relating to the plugging of abandoned water wells. Section A-6 of this Act (R.S. 38:3094) states that the Department shall:

> "Require that all abandoned wells be reported and sealed with approved standards and to establish such standards."

Accordingly, the Rules, Regulations and Standards for Plugging Abandoned Water Wells and Holes stated herein were prepared in response to this legislative directive and were developed in coordination with other state agencies that are also concerned with the protection of the water resources of the state. The regulations and standards are intended to provide for restoration, as nearly as possible, of those subsurface and surface conditions that existed prior to drilling, boring, digging or augering activities; taking into account any changes that may have occurred as a result of "natural stresses".

These regulations and standards do not preempt but instead compliment the Rules and Regulations of the Louisiana Department of Natural Resources, Office of Conservation, related to plugging and abandonment of oil, gas, saltwater, saltwater disposal, waste disposal and injection wells, and the Rules and Regulations of the Department of Environmental Quality related to plugging of monitoring wells and geotechnical boreholes associated with waste activities. These regulations and standards are also important as guidelines for other state agencies when promulgating and enforcing their plugging regulations and standards.

SECTION 3.2.1.0.

Abandoned Water Wells and Holes That Shall be Plugged. The Rules, Regulations and Standards for Plugging Abandoned Water Wells and Holes shall apply to all abandoned water wells and holes including, but not limited to, public supply, domestic, irrigation/agriculture, industrial, power generation, rig-supply, observation, dewatering, monitoring, and heat pump supply, as well as abandoned pilot holes, test holes, geotechnical boreholes, and heat pump holes (closed loop system). Abandoned or improperly plugged wells or holes could act as conduits for transmitting contaminants from the surface down to the water-bearing sands and thereby contaminate the state's ground water resources. For glossary of terms, refer to Appendix I.

SECTION 3.2.2.0.

Exemptions. In accordance with R.S. 38:3097, the following wells and holes are exempted from the provisions of the Rules, Regulations and Standards stated herein: saline-water wells associated with secondary recovery operations, brine wells, oil and gas wells and holes, injection wells, geothermal and geopressured holes associated with production of oil and gas, and waste disposal wells.

Although the cited activities are not covered by R.S. 38:3094, they are not exempted or excepted by state law; therefore, persons, firms, corporations or others dealing with the cited activities should contact the appropriate regulating agencies for further information and should take any and all action necessary to protect the water resources of the state from contamination. The exclusion of these activities from these regulations does not in any way remove or establish legal liability for health and safety hazards, contamination, or pollution problems alleged to be caused by persons engaged in the activities cited in the first paragraph of this section.

SECTION 3.2.3.0.

Licensing Requirements. State Act 715 of 1980 (R.S. 38:3098), as amended by State Act 313 of 1984, requires that every person, firm or corporation desiring to engage in the business of plugging and abandoning wells or holes, excluding oil and gas wells, in the State of Louisiana shall obtain a license from the Department in accordance with the rules and regulations stated in Chapter V.

Accordingly, plugging of abandoned water wells and holes must be conducted by a qualified contractor who is duly licensed by the Department, with the following exceptions:

A) Nothing in this chapter shall prevent a person who has not obtained a license, pursuant thereto, from plugging a domestic water well on his own or leased property which was intended for use only in a single family house which is his permanent residence, or was intended for use only for watering livestock on his farm; however, that person shall comply with all rules, regulations and standards for plugging such wells or holes, including the submission of plugging and abandonment forms.

B) In addition to the domestic wells referred to in paragraph (A), a person may plug an abandoned well or hole on his own or leased property provided that the person has the required equipment and knowledge for properly plugging the well or hole, in accordance with the Rules, Regulations, and Standards stated herein, to the satisfaction of the Department, and provided that the person has obtained Departmental approval for plugging the well or hole himself, and provided that such approval is obtained prior to the beginning of the plugging operation. The owner shall complete and submit a Water

Well Plugging and Abandonment Form (DOTD-GW-2) to the Department within thirty (30) calendar days after completion of the plugging operation.

SECTION 3.2.4.0.

Variance Requests. Because of variable hydrologic conditions, differences in well construction, depth, and size, and the irregular occurrence of saltwater sands, the Rules, Regulations and Standards stated herein cannot cover every possible situation. For cases where compliance with the Rules, Regulations, and Standards stated herein is impractical, the owner, engineer, or the water well contractor may request a variance and/or clarification on methods specified. Such requests shall be addressed to the Department as follows:

Department of Transportation and Development
Attn: Chief, Water Resources Section
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245
Phone: (504) 379-1434

The request must be in writing, must demonstrate that compliance is impractical and must outline a satisfactory alternative. The Department may prescribe, in writing, alternate requirements that are equivalent to the regulations and standards stated herein relating to the protection of aquifer and prevention of ground water contamination.

SECTION 3.2.5.0.

Submission of Water Well Plugging and Abandonment Forms (DOTD-GW-2). The contractor who plugs an abandoned well or hole shall complete and submit to the Department the original copy of the Water Well Plugging and Abandonment Form (DOTD-GW-2) within thirty (30) calendar days after the completion of the work. The owner's copy shall be sent to the owner immediately after

completion of the work, and the contractor shall retain the contractor's copy for his files. A sample copy of Form DOTD-GW-2 and instructions for completing the form are included in Appendix IV. For reporting purposes only, the Department considers the work completed when the work is accepted by the owner or when the contractor has moved his equipment from the site; whichever comes first. Acceptance by the owner or removal of equipment from the site by the contractor does not imply, in any way, acceptance or approval by the State of Louisiana. The Department, after inspection of the site and records (refer to Section 3.2.9.0.), can require the owner and/or the contractor to do whatever additional work is necessary to properly plug and seal a hole or well in accordance with the standards stated herein. The expense for the additional work shall be borne by the owner and/or the contractor, as the case may be.

For the purpose of reporting the plugging of abandoned geotechnical boreholes, the drilling contractor shall certify annually at license renewal time, that all boreholes drilled by his firm have been plugged in accordance with requirements of Section 3.6.4.3.

SECTION 3.2.6.0.

Responsibility of The Owner. Unless specified otherwise in the Rules and Regulations stated herein, it shall be the responsibility of the owner to have an abandoned water well properly plugged and sealed in accordance with methods and standards stated in Section 3.6.0.0. within ninety (90) calendar days after abandonment. If the owner fails to plug an abandoned well within the 90-day time period, enforcement procedures, as outlined in Section 3.2.7.0., will be initiated by the Department.

SECTION 3.2.7.0.

Failure of The Owner to Plug an Abandoned Water Well.

A) When the owner fails to plug an abandoned water well within the time period specified in Section 3.2.6.0., the Department, upon receiving information on the existence of such well, will order the owner to plug the well within thirty (30) calendar days after receipt of the order.

B) If the owner fails to comply within the 30-day time period or does not offer, in writing, an acceptable alternative time interval for plugging the well, the owner will be considered in violation of R.S. 38:3094, paragraph (6) of subsection A, which permits a civil penalty of not more than One Thousand Dollars ($1,000) a day for each day of violation and for each act of violation.

SECTION 3.2.8.0.

Responsibilities of the Contractor. The contractor who agrees to plug an abandoned well or hole for the owner shall be fully responsible for plugging the well or hole in accordance with the Rules, Regulations and Standards stated herein. He is also responsible for completing and submitting a plugging and abandonment form (DOTD-GW-2) to the Department within thirty (30) calendar days after completion of the plugging operation. The contractor shall also be responsible for informing the owner of the necessity of plugging and sealing any other water well or hole on the property that may have been previously abandoned or which may be abandoned in the future.

SECTION 3.2.9.0.

Site Inspection by the Department Representatives. The Department may order, at any time, that the site of an abandoned water well or hole be inspected by Department representatives to determine whether the work has been satisfactorily completed in accordance with the standards stated herein, and as stated on the Water Well Plugging and Abandonment Form (DOTD-GW-2). The owner and/or the contractor shall make all records available to the representatives of the Department and the owner shall allow representatives to enter the property and visit the site(s).

SECTION 3.3.0.0.

AVAILABILITY OF WATER WELL DATA

The drilling and construction records for a water well or test hole may be obtained from the owner, from the water well contractor, and/or from one of the following governmental agencies:

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
Water Resources Section
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245

or

U.S. GEOLOGICAL SURVEY
Water Resources Division
P.O. Box 66492
Baton Rouge, Louisiana 70896

Reports and/or information on hydrology, geology, the occurrence of saline water-bearing and fresh water-bearing sands and quality of water may be

obtained from the above-named governmental agencies and/or the following:

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
Office of Conservation
P.O. Box 44275
Baton Rouge, Louisiana 70804

or

LOUISIANA GEOLOGICAL SURVEY
P.O. Box G
Baton Rouge, Louisiana 70803

Information on monitoring wells may be obtained from the owner, the water well contractor, the engineer, the Department of Transportation and Development, as listed above, and/or from the following agency:

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
Solid and Hazardous Waste Division
P.O. Box 44066
Baton Rouge, Louisiana 70804

SECTION 3.4.0.0.

REGULATIONS FOR DETERMINING STATUS OF WELLS OR HOLES AND FOR DETERMINING PLUGGING RESPONSIBILITY

Following are the regulations for determining the status of a drilled, bored, cored, augered or driven water well or hole and for determining the party responsible for plugging abandoned wells and holes.

SECTION 3.4.1.0.

Active Status. A well is considered to be active if it is an operating well used to supply water.

SECTION 3.4.2.0.

Standby Status. A well is considered to be standby if it is used in emergencies or occasionally used to supply water.

SECTION 3.4.3.0.

Inactive Status. A well is considered to be inactive if it is not presently operating but is maintained in such a way that it can be put back in operation, with a minimum of effort, to supply water. Before a well can be put in inactive status, the owner shall present evidence to the Department as to the condition of the well and as to his intentions to use the well in the future, as well as obtaining the Department's written approval. As evidence of intentions, the owner shall be responsible for properly maintaining the well in such a way that:

- The well and the annular space between the hole and casing shall have no defects that will permit the seepage of surface water into the well,
- The well is clearly marked and is not a safety hazard,
- The well is adequately capped in such a manner as to prevent easy entry by other than the owner,
- The area surrounding the well is kept clear of waste and debris,
- If the pump and/or motor have been removed for repair, replacement, etc., the well is adequately capped to prevent injury to people and to prevent the entrance of any contaminant or other objectionable material,
- The well is not used for disposal or injection of trash, garbage, sewage, waste water and/or storm runoff, and
- The well is easily accessible for routine maintenance and periodic inspection.

SECTION 3.4.4.0.

Abandoned Wells. A well is considered to be abandoned if its use has been permanently discontinued; its pumping equipment has been permanently removed; the well is in such a state of disrepair that it cannot be used to supply water and/or has the potential for transmitting surface contaminants into an aquifer; the well poses potential health or safety hazards, or the

well is in such a condition that cannot be placed in the active, standby or inactive status. The owner of an abandoned well shall be responsible for plugging such a well in accordance with Methods and Standards, stated in Section 3.6.0.0., within ninety (90) calendar days from the initial date of abandonment. If the owner fails to plug an abandoned well within the 90-day time period, enforcement procedures, as outlined in Section 3.2.7.0., will be initiated by the Department.

SECTION 3.4.4.1.

Abandoned Rig-Supply Water Wells. A water well drilled at an oil or gas drilling site to supply water for drilling activities shall be considered an abandoned well immediately after the termination of the oil or gas drilling operations and removal of the rig from the site. The company in charge of the drilling of the oil or gas well (lessee) shall be responsible for plugging the abandoned water well, in accordance with Section 3.6.0.0., within thirty (30) calendar days after the termination of oil or gas drilling operations and removal of the rig from the site.

If the ownership of the water well is to be conveyed to the landowner in lieu of plugging and abandoning the well, the well must conform to the requirements for active or inactive status. The ownership transfer must be made through a legal document advising the landowner of his responsibilities and obligations to properly maintain the well, including the proper plugging of the well when it is abandoned and no longer needed for water production activities. The company (lessee) shall provide the Department with a copy of the transfer document within thirty (30) calendar days after the transfer of the ownership. Upon receiving the document, the Department will send a letter to the new owner requesting well use information and advising him/her of the

appropriate regulations. The owner is required to respond within thirty (30) calendar days, stating intended use and requesting an appropriate status, as outlined in Sections 3.4.1.0. and 3.4.3.0.

SECTION 3.4.5.0.

Observation Wells. A well is considered to be an observation well if it is used by the owner, by governmental agencies, or by an appropriate engineering or research organization to obtain information on the water resources of an area. Observation wells shall be covered with an appropriate cap or cover to prevent unauthorized use or entry and to prevent entry of contaminants. It shall be the responsibility of the owner, organization or agency making the observations to prevent entry of any foreign materials or water into observation wells and to keep the surrounding area clear of waste, water, debris and other materials.

A WELL SHALL NOT BE USED FOR ANY INJECTION OR RECHARGE STUDIES UNTIL A PERMIT IS OBTAINED IN ACCORDANCE WITH EXISTING ORDERS, RULES AND REGULATIONS OF THE DEPARTMENT OF NATURAL RESOURCES, OFFICE OF CONSERVATION.

An inactive water well may be used as an observation well; however, when it is no longer needed for observation purposes and the owner does not intend to convert it to an active status, the well shall be considered abandoned. The owner shall be responsible for plugging the abandoned well in accordance with Methods and Standards, stated in Section 3.6.0.0., within ninety (90) calendar days after abandonment, unless agreement with the agency or organization which used the well for observation clearly delegates the plugging responsibility to the agency or organization.

A well constructed solely for observation purposes by an owner, a governmental agency, or an engineering or research organization, must be converted to an active, inactive or standby status when no longer needed for

observation purposes, otherwise it shall be considered abandoned. It shall be the responsibility of the owner, agency or organization who installed the well to plug the abandoned well in accordance with Methods and Standards, stated in Section 3.6.0.0., within ninety (90) calendar days after abandonment.

SECTION 3.4.6.0.

Abandoned Pilot Holes and Test Holes. A pilot hole, drilled with the intent to install casing and produce water, shall be considered an abandoned hole immediately after the termination of the drilling operations if the hole is not cased and/or a well is not developed or constructed. It shall be the water-well contractor's responsibility to plug the abandoned hole, in accordance with Section 3.6.4.1., within thirty (30) calendar days after the termination of drilling operations.

A test hole, drilled to obtain geologic, hydrologic and water-quality data shall be considered an abandoned hole immediately after the completion of all testing operations. The agency or the contractor in charge of the exploratory work is responsible for plugging the abandoned hole in accordance with Section 3.6.4.1., within thirty (30) calendar days after the termination of drilling operations.

SECTION 3.4.7.0.

Abandoned Geotechnical Boreholes. A hole, drilled, bored, cored or augered to obtain soil samples to be analyzed for chemical and/or physical properties shall be considered abandoned immediately after the completion of the drilling and sampling operations. It shall be the drilling contractor's responsibility to plug the abandoned hole in accordance with Methods and Standards stated in Section 3.6.4.3. within thirty (30) calendar days after the termination of drilling and sampling operations.

SECTION 3.4.8.0.

Abandoned Heat Pump Holes (Closed Loop System). A hole drilled to install piping for an earth-coupled water source heat pump system shall be considered an abandoned hole if the piping is not installed and/or the hole is not plugged by the drilling contractor in accordance with Methods and Standards, stated in Section 3.6.4.4., within thirty (30) calendar days after completion of drilling operations. It shall be the drilling contractor's responsibility to plug the abandoned hole in accordance with Methods and Standards, stated in Section 3.6.4.4., within thirty (30) calendar days after the hole is considered abandoned.

SECTION 3.5.0.0.

PLUGGING AND FILLER MATERIALS

SECTION 3.5.1.0.

Plugging Material. It is recognized that no material is completely impervious; however, experience and tests have shown that cement-bentonite slurry has a low permeability, good sealing properties, and a low shrinkage factor, so as to be preferred for use when plugging an abandoned water well or hole. Cement-bentonite slurry is a mixture of cement, bentonite, and water, consisting of not more than eight (8) percent bentonite by dry weight of the cement and a maximum of ten (10) gallons of water per sack (94 pounds) of cement. Additives, in the approved and proper ratio, may be added to the slurry, if required. If the slurry is to be prepared in the field, it is recommended that the bentonite be added after cement and water are thoroughly mixed.

Neat cement, which is a mixture of cement and water, consisting of not more than five (5) gallons of water per sack (94 pounds) of cement, may be used as plugging material in lieu of cement-bentonite slurry.

When permitted by the Methods and Standards stated in Section 3.6.0.0., heavy drilling mud or bentonite slurry, weighing not less than nine (9) pounds per gallon, may be used as plugging material. The plugging material shall be free of foreign and organic additives.

SECTION 3.5.2.0.

Filler Material. When permitted by the Methods and Standards stated in Section 3.6.0.0., heavy drilling mud or bentonite slurry, weighing not less than nine (9) pounds per gallon, coarse ground bentonite or clean sand may be used as filler material. The filler material shall be free of foreign and organic additives.

SECTION 3.5.3.0.

Calculations to Verify Adequacy of Plugging Materials. To assure an abandoned water well or hole is plugged and sealed properly and that there has been no "jamming" or "bridging" of the material, verification calculations and measurements shall be made by the contractor to determine whether the volume of the material placed in the well or hole at least equals the volume of the casing or hole plugged and/or filled. When bridge plugs are used, sufficient time shall be allowed for the material to set. Any measurements and calculations made in setting and verifying the location of the plug shall be made available to the Department upon request. The Department shall be solely responsible for determining whether a well or hole is satisfactorily plugged or sealed.

SECTION 3.6.0.0.

METHODS AND STANDARDS FOR

PLUGGING ABANDONED WATER WELLS AND HOLES

The following Methods and Standards shall be used for the plugging of abandoned water wells and holes. If there is a need for variance from these regulations and/or clarification is required, Departmental approval shall be obtained in writing, before the plugging operation is begun. For variance requests, refer to Section 3.2.4.0.

SECTION 3.6.1.0.

Methods and Standards for Plugging Abandoned Water Wells. The following methods and standards shall apply to all abandoned water wells, regardless of use or type.

SECTION 3.6.1.1.

Removal of Obstructions From the Well. Before the plugging operation is begun, the drilling and construction records for the well should be obtained and studied (see Section 3.3.0.0.). An investigation of the well shall be made to determine if there is any obstruction in the well that would interfere with the plugging operation. Any obstruction in the well shall be removed, using an acceptable method, before initiating the plugging operation.

SECTION 3.6.1.2.

Cutting Off the Top of the Casing. In areas subject to subsidence and/or farming, the top of the casing shall be cut off a minimum of three (3) feet below the surface of the ground before plugging operation begins. After filling the well with cement-bentonite slurry, the excavation above the top of the cement plug shall be filled with compacted soil to minimize future hazards

to farming equipment, etc. In other areas, the top of the casing shall be cut off at or below the ground surface. Under no circumstances shall the top of the casing protrude above the surface of ground.

SECTION 3.6.1.3.

Plugging Material for the Screen. The screen or the area opposite the production aquifer (as in open hole construction) may be filled with filler materials specified in Section 3.5.2.0. in lieu of cement-bentonite slurry.

SECTION 3.6.1.4

Plugging Method. The entire well shall be plugged with cement-bentonite slurry from bottom of the well up to the ground surface using the pump-down method, preferably in one continuous operation. Placement of plugging material by pouring or dropping through the water shall not be permitted.

SECTION 3.6.1.5.

Annular Space. If the annular space of the abandoned well is not already sealed, the plugging material shall be brought up to the surface and allowed to spill over the top of the casing and into the annulus, sealing the annular space between the casing and the borehole. If the annular space is already sealed, the plugging material shall be brought up to the ground surface, unless specified otherwise.

SECTION 3.6.1.6.

Temporary Shut Down. When plugging of an abandoned water well or hole is temporarily suspended, such as overnight shut down or awaiting material, the well or hole shall be covered and the immediate area conspicuously marked to protect and warn the public. The cover shall be sufficiently strong and

anchored to prevent easy or unintentional entry. The well or hole shall be sealed to prevent the seepage of surface water and foreign material into the well or hole.

SECTION 3.6.1.7.

Areas of Confirmed Contamination. In areas of confirmed ground water or soil contamination, the entire well shall be plugged with cement-bentonite slurry. The annular space of the well, if not already sealed, shall be sealed by perforating or ripping the casing and forcing cement-bentonite slurry under pressure into the annular space and surrounding formation to prevent the entry of contaminated fluids into an aquifer and to prevent the movement of water from one aquifer to another.

SECTION 3.6.1.8.

Areas of Potential Contamination. In areas of potential ground water or soil contamination, the entire well shall be plugged with cement-bentonite slurry. It is recommended that the annular space of the well, if not already sealed, be perforated or ripped and cement-bentonite slurry forced under pressure into the annular space and surrounding formation to safeguard against any possible entry of contaminated fluids into an aquifer and to prevent the movement of water from one aquifer to another.

SECTION 3.6.1.9.

Plugging of Abandoned Water Well From Which Some or All of the Casing Has Been Removed.

A) If the casing remaining is in the upper part of the well, the well shall be sounded to determine the amount, if any, of "cave in". The part of the hole filled with "cave in" material shall be reamed or

drilled out to the original depth of the well and then the entire hole shall be plugged with cement-bentonite slurry from the bottom, up to the ground surface, using the pump down method.

B) If the casing (including the screen) remaining is in the lower part of the well, the well and hole shall be completely filled with cement-bentonite slurry from the bottom, up to the ground surface, using the pump-down method.

C) If all the casing and screen is removed, the hole for the entire original depth of the well shall be plugged with cement-bentonite slurry from the bottom, up to the ground surface, using the pump-down method.

SECTION 3.6.2.0.

Plugging of Abandoned Monitoring Wells. The entire well shall be plugged with cement-bentonite slurry from bottom of the well, up to the ground surface, using the pump-down method.

NOTE: PLUGGING OF ABANDONED MONITORING WELLS ASSOCIATED WITH FACILITIES REGULATED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) REQUIRE APPROVAL FROM THAT DEPARTMENT PRIOR TO ACTUAL PLUGGING.

SECTION 3.6.3.0.

Plugging of Abandoned Dug or Augered Wells. Domestic dug or augered wells shall be plugged from bottom of the well up to the ground surface with cement-bentonite slurry or with local fill material such as silt, sand, clay, native soil, or a mixture thereof. If local fill material is used, it should be allowed to settle, and then permanently capped with cement or compacted clay.

SECTION 3.6.4.0.

Plugging of Abandoned Holes. If the hole penetrates an aquifer containing saline water, the entire hole shall be plugged with cement-bentonite slurry from bottom of the hole, up to the ground surface using the pump-down method; otherwise, the hole shall be plugged in accordance with the following sections.

SECTION 3.6.4.1.

Plugging of Abandoned Pilot Holes.

A) The entire hole shall be plugged with cement-bentonite slurry from bottom of the hole, up to the ground surface, using the pump-down method.

NOTE: If an aquifer (see Glossary) is not penetrated, the hole shall be plugged with either cement-bentonite slurry or bentonite slurry from bottom of the hole, up to a depth of 25 feet below the ground surface and then the upper 25 feet of the hole shall be plugged with cement-bentonite slurry, using the pump-down method.

SECTION 3.6.4.2.

Plugging of Abandoned Test Holes. An abandoned test hole shall be plugged with cement-bentonite slurry from bottom of the hole, up to the ground surface, using the pump-down method. If the casing cannot be removed, in addition to plugging the entire casing with cement-bentonite slurry, the annular space must also be cemented as per requirements of Section 2.6.0.0. or as approved by the Department.

SECTION 3.6.4.3.

Plugging of Abandoned Geotechnical Boreholes.

A) The entire hole shall be plugged with cement-bentonite slurry from bottom of the hole, up to the ground surface, using the pump-down method, or

B) The hole shall be plugged with bentonite slurry from bottom of the hole, up to a depth of 25 feet below the ground surface and then the upper 25 feet of the hole shall be plugged with cement-bentonite slurry, using the pump-down method.

For boreholes of 25 feet or less, drill cuttings from the original hole may be used to plug the hole in lieu of cement-bentonite slurry, provided that an aquifer is not penetrated and provided that a concrete cylinder is pushed into the hole to form a permanent seal at the ground surface.

NOTE: PLUGGING OF GEOTECHNICAL BOREHOLES ASSOCIATED WITH FACILITIES REGULATED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) REQUIRE APPROVAL FROM THAT DEPARTMENT PRIOR TO ACTUAL PLUGGING.

SECTION 3.6.4.4.

Plugging of Heat Pump Holes (Closed Loop System).

A) The entire hole shall be plugged with cement-bentonite slurry from bottom of the hole, up to the bottom of the horizontal trench, using the pump-down method, or

B) The hole shall be plugged with bentonite slurry from bottom of the hole, up to a depth of 25 feet below the bottom of the horizontal trench and then the upper 25 feet of the hole shall be plugged with cement-bentonite slurry, using the pump-down method.

SECTION 3.7.0.0.

ENFORCEMENT ACTIONS

Provisions addressing enforcement of this Chapter appear in Louisiana Revised Statute 38:3096, as follows:

A) Whoever knowingly and willingly violates a provision of this chapter, or a rule, regulation or order of the director or a board hereunder, shall be subject to a civil penalty of not more than One Thousand Dollars a day for each day of violation and for each act of violation if a penalty for the violation is not otherwise provided in this chapter.

   (1) The place of suit to recover this penalty shall be selected by the director or board, as may be appropriate, in the district court of the parish in which any one of the defendants resides, or in the district court of the parish where the violation took place.

   (2) Suit shall be at the direction of the director or board as may be appropriate and shall be instituted and conducted in his or its name by the Attorney General or by the District Attorney of the district under the direction of the Attorney General.

B) Whoever knowingly and willfully aids or abets a person in the violation of a provision of this chapter, or in any rule, regulation or order made hereunder shall be subject to the same penalties provided herein for the principal violator.

SECTION 3.7.1.0.

Falsification of Documents. Falsification of documents to evade regulations, as well as penalties for said falsifications, appears in Louisiana Revised Statute 38:3095 as follows:

A) No person shall, for the purpose of evading this chapter or any rule, regulation or order made thereunder:

(1) Make, or cause to be made, any false entry or statement of fact in any report required to be made by this chapter, or by any rule, regulation or order made hereunder; or

(2) Make, or cause to be made, any false entry in an account, record or memorandum kept by any person in connection with the provisions of this chapter or of any rule, regulations or order made thereunder; or

(3) Remove out of the jurisdiction of the state or destroy or mutilate, alter, or by any other means, falsify any book, record, or of the paper pertaining to the matters regulated by this chapter, or by any rule, regulation or order made thereunder.

B) Whoever violates this section shall be fined not more than Five Thousand Dollars or imprisoned not more than six months or both.

The penalty provision for falsification of documents required under the provisions of this chapter are therefore criminal in nature and will be enforced through the district attorney having jurisdiction where said violation occurs. It should also be noted that utilization of the United States Mail in the falsification of documents constitutes a violation of Title 18 of the United States Code (Mail Fraud), and such violations will be referred to the appropriate United States Attorney.

SECTION 3.7.2.0.

Appeals. An alleged violator may appeal any order of the Department by requesting a hearing. The hearing request must be made to the Department, in writing, within thirty (30) calendar days of the original order and must be sent by "Certified Mail -- Return Receipt Requested". After receiving the request, the Department will arrange a hearing to determine what other remedial action will serve to effect compliance with the rules and regulations.

CHAPTER IV.

RULES AND REGULATIONS FOR INSTALLING

CONTROL DEVICES ON FREE FLOWING WATER WELLS

As announced in the October 1985 issue of the LOUISIANA REGISTER, the Rules and Regulations, stated herein, were prepared by the Louisiana Department of Transportation and Development, Office of Public Works, hereafter referred to as "Department", in accordance with R.S. 38:3094, paragraph (7), subsection A.

The Rules and Regulations, stated herein, became effective on November 1, 1985 and preempted the Rules and Regulations which had been in effect since June 1, 1977.

SECTION 4.1.0.0.

PURPOSE

The purpose of the Rules and Regulations, stated herein, is to conserve the ground water resources of the state by requiring that the owner install control devices on free flowing water wells (for glossary of terms, refer to Appendix I) producing in excess of twenty-five thousand (25,000) gallons per day. To accomplish this requirement, the owner shall install a flow control device on each free flowing water well in accordance with the Rules and Regulations stated in this chapter.

SECTION 4.2.0.0.

GENERAL RULES AND REGULATIONS

The Rules and Regulations, stated herein, apply to all free flowing water wells producing in excess of twenty-five thousand (25,000) gallons per day. A free flowing well is an artesian well which is allowed to flow, under natural conditions, at or above the land surface.

SECTION 4.2.1.0.

Exemptions. The following water well are exempt form the provisions of this chapter:

- Free flowing water wells producing twenty-five thousand (25,000) gallons per day or less.
- Water wells producing saline water in connection with oil and gas production.

SECTION 4.2.2.0.

Determination of Yield. The Department will measure the yield of the free flowing water well at no cost to the owner. If the owner disagrees with the measurement made by the Department and wishes to have a third party measure the yield, the costs shall be borne by the owner. The method used to measure the well yield shall be acceptable to the Department.

SECTION 4.2.3.0.

Wells In a State of Disrepair or Non-Use. If a water well is in such a state of disrepair that it cannot be used and a control device cannot be installed, it shall be considered abandoned and shall be plugged by the owner in accordance with the provisions of Chapter III, entitled "Rules, Regulations and Standards for Plugging Abandoned Water Wells and Holes".

SECTION 4.3.0.0.

RESPONSIBILITY OF THE OWNER

A) The owner shall be the party responsible for installing a flow control device on each free flowing water well producing in excess of twenty-five thousand (25,000) gallons per day.

B) The owner shall allow representatives of the Department to enter the property and visit the well site to measure the well yield, verify the installation of a control device, or inspect the completed work.

SECTION 4.4.0.0.

RESPONSIBILITY OF THE DEPARTMENT

A) The Department will measure the yield of the free flowing water well at no cost to the owner.

B) It shall be the sole responsibility of the Department to determine whether a control device should be installed on a well.

C) At the request of a parish police jury or other governmental entity, the Department may make a survey to locate and report on the location of free flowing water wells.

D) The Department may enter into a financial cooperative agreement with the parish police jury or other governmental entity to have control devices installed on those free flowing water wells which produce over twenty-five thousand (25,000) gallons per day.

E) The Department shall, in no way, be held responsible for a well "sanding up" or failing to yield water after a control device is installed on the well.

F) The Department, upon receiving information on the existence of a free flowing water well, shall proceed as follows:

1. Arrange to measure the yield of the well and determine whether a control device should be installed.
2. If a control device is required, the Department will issue an order to the owner to require the installation of a control device on the well within ninety (90) calendar days from the date of the said order. When the installation of the control device is completed, the owner shall apprise the Department, in writing, within thirty (30) calendar days after completion of work.

SECTION 4.5.0.0.

FAILURE OF RESPONSIBLE PARTY TO INSTALL A CONTROL DEVICE

If the owner fails to comply with the Department's order concerning the installation of a control device within the 90-day time period or does not offer, in writing, an acceptable alternative time interval for installing such a device, the owner will be considered in violation of R.S. 38:3094, paragraph (7) of subsection A, which permits a civil penalty of not more than One Thousand Dollars ($1,000) a day for each day of violation and for each act of violation.

SECTION 4.6.0.0.

ENFORCEMENT ACTIONS

Provisions addressing enforcement of this Chapter appear in Louisiana Revised Statute 38:3096, as follows:

A) Whoever knowingly and willfully violates a provision of this chapter, or a rule, regulations, or order of the director or a board hereunder, shall be subject to a civil penalty of not more than One Thousand Dollars a day for each day of violation and for each act of violation, if a penalty for the violation is not otherwise provided in this chapter.

1) The place of suit to recover this penalty shall be selected by the director or board, as may be appropriate, in the district court of the parish of the residence of any one of the defendants, or in the district court of the parish where the violation took place.

2) Suit shall be at the direction of the director or board, as may be appropriate, and shall be instituted and conducted in his or its name by the Attorney General or by the District Attorney of the district under the direction of the Attorney General.

3) Whoever knowingly and willfully aids or abets a person in the violation of a provision of this chapter, or in any rule, regulation, or order made hereunder, shall be subject to the same penalties provided herein for the principal violator.

SECTION 4.6.1.0.

Falsification of Documents. Falsification of documents to evade regulations, as well as penalties for said falsifications, appears in Louisiana Revised Statute 38:3095 as follows:

A) No person shall for the purpose of evading this chapter, or any rule, regulation, or order made thereunder:

(1) Make or cause to be made any false entry or statement of fact in any report required to be made by this chapter or by any rule, regulation, or order made hereunder; or

(2) Make or cause to be made any false entry in an account, record, or memorandum kept by any person in connection with the provisions of this chapter or of any rule, regulation, or order made thereunder; or

(3) Remove out of the jurisdiction of the state, or destroy or mutilate, alter, or by any other means falsify any book, record, or other paper pertaining to the matters regulated by this chapter or by any rule, regulation, or order made thereunder.

B) Whoever violates this section shall be fined not more than Five Thousand Dollars or imprisoned not more than six months or both.

The penalty provision for falsification of documents required under the provisions of this chapter are therefore criminal in nature and will be enforced through the District Attorney having jurisdiction where said violation occurs. It should also be noted that utilization of the United States Mail in the falsification of documents constitutes a violation of Title 18 of the United States Code (Mail Fraud), and such violations will be referred to the appropriate United States Attorney.

SECTION 4.6.2.0.

Appeals. An alleged violator may appeal any order of the Department by requesting a hearing. The hearing request must be made to the Department, in writing, within thirty (30) calendar days of the original order and must be sent by "Certified Mail -- Return Receipt Requested". After receiving the

request, the Department will arrange a hearing to determine what other remedial action will serve to effect compliance with the rules and regulations.

CHAPTER V

RULES, REGULATIONS AND PROCEDURES FOR LICENSING WATER-WELL CONTRACTORS AND OTHER DRILLERS

As announced in the October 1985 issue of the LOUISIANA REGISTER, the Rules, Regulations and Procedures, stated herein, were prepared by the Louisiana Department of Transportation and Development, Office of Public Works, hereafter referred to as the "Department", in accordance with R.S. 38:3098 through R.S. 38:3098.8.

The Rules, Regulations and Procedures stated herein became effective on November 1, 1985 and preempted the Rules, Regulations and Procedures which had been in effect since April 21, 1983.

SECTION 5.1.0.0.

PURPOSE

The purpose of the Rules, Regulations and Procedures, stated herein, is to provide for a fair and impartial means for the licensing of and the development of minimum qualifications and standards of conduct for those persons, firms or corporations engaged or desiring to engage in the business of drilling or reworking water wells, drilling monitoring wells, heat pump wells or holes, geotechnical boreholes and/or plugging and abandoning wells or holes, excluding oil and gas wells.

The intent of the regulations and procedures is to minimize the chances of contaminating aquifers that are drinking water sources or potential sources, by those who are not qualified to drill or construct wells or holes and to reduce health and safety hazards associated with drilling and construction of such wells or holes.

For glossary of terms, refer to Appendix I.

SECTION 5.2.0.0.

DEFINITION OF CONTRACTOR/DRILLER

Because the words "contractor" and "driller" are used interchangeably in R.S. 38:3098 and because it was the intent of the State Legislature to license "contractors" and not those persons who operate the rig and/or perform labor or services on a rig or site at the direction and under the personal supervision of a licensed contractor (R.S. 38:3098D), the word "contractor" or "driller" in these regulations is used to refer to the person, firm, or corporation who engages in the business of drilling or reworking water wells, drilling monitoring wells, heat pump wells or holes, geotechnical boreholes and/or plugging and abandoning wells or holes, excluding oil and gas wells.

SECTION 5.3.0.0.

WELLS AND HOLES THAT SHALL BE DRILLED BY A LICENSED CONTRACTOR

The following wells and holes shall be drilled, or constructed by a licensed contractor (driller) who is duly licensed by the Department:

- All water wells, regardless of use or type
- Water test holes and pilot holes
- Monitoring wells
- Observation wells
- Heat pump wells and holes
- Geotechnical boreholes

Additionally, reworking of water wells, as well as plugging and abandoning wells and holes, excluding oil and gas wells, shall also be undertaken by a licensed contractor.

SECTION 5.3.1.0.

Exemptions.

A) Nothing in this chapter shall prevent a person who has not obtained a license pursuant thereto from constructing or plugging a water well on his own or leased property which was intended for use only in a single family house which is his permanent residence, or was intended for use only for watering livestock on his farm; however, that person shall comply with all rules, regulations and standards for constructing and plugging such wells or holes, including registration requirements.

B) If the Department finds that compliance with all the requirements of this chapter would result in undue hardship, an exemption from any one or more of such requirements may be granted by the Department to the extent necessary to ameliorate such undue hardship and to the extent such exemption can be granted without impairing the intent and purpose of this chapter.

SECTION 5.4.0.0.

ADVISORY COMMITTEE FOR THE REGULATION AND CONTROL OF WATER WELL CONTRACTORS (DRILLERS)

A ten-member advisory committee shall be appointed, in accordance with R.S. 38:3098.6, to serve in an advisory capacity and to make recommendations for the regulation and control of water well contractors (drillers), as defined in this chapter.

The advisory committee shall consist of ten (10) members, as follows:

1. The Secretary of the Department of Transportation and Development, Office of Public Works or his designee,

2. The Secretary of the Department of Natural Resources or his designee,

3. The Secretary of the Department of Health and Human Resources or his designee,

4. The President of the Louisiana Engineering Society or his designee,

5. One representative of the United States Geological Survey,

6. One domestic well driller selected by the Governor from a list of three submitted by the Louisiana Water Well Driller's Association,

7. One municipal and industrial well driller selected by the Governor from a list of three submitted by the Louisiana Water Well Driller's Association,

8. One irrigation well driller selected by the Governor from a list of three submitted by the Louisiana Water Well Driller's Association,

9 & 10. Two drillers, at large, selected by the Secretary of the Department of Transportation and Development, Office of Public Works, from the water-well industry as a whole.

All appointments shall be for four year terms. The chairman and vice-chairman shall be elected by the members of the committee (see Section 5.4.1.0.). The committee members who are public employees shall receive no extra pay or allowances for their attendance at the meetings of the advisory committee; all other members of the advisory committee shall receive no salary or per diem but may be compensated for receipted expenses actually incurred in official activities of the committee, approved by the Department, out of funds derived from license fees collected under the provision of this chapter and in accordance with policies adopted by the legislative auditor in such matters.

SECTION 5.4.1.0.

By-Laws and Meetings. The advisory committee shall hold a minimum of one regular meeting each quarter, usually in February, May, August, and November, as specified by the chairman. Notice of the meetings shall be given by the

Department at least fifteen days prior to the meetings. Designated committee members must inform the Department if they are unable to attend a meeting. Committee members do not have the privilege of sending replacements. Six members will be considered as a quorum for transacting business.

The chairman and vice-chairman shall be elected by the members of the committee during the third quarter meeting of each year to serve a term of one year.

A special meeting of the advisory committee may be called by the chairman or by three committee members, upon notification of all members, with five days notice. All notices of regular or special meetings of the committee will be sent to the official addresses of the members, as recorded by the committee.

The chairman shall preside at all meetings of the committee and shall, at any and all hearings of the committee, decide all questions of evidence and procedure, subject to the approval of a majority of the members of the committee present. The chairman or the person occupying the chair shall vote only to break a tie.

In the absence of the chairman and vice-chairman of the committee, the members present shall choose from their number an acting chairman.

In the case of the vacancy of the position of any officer of the committee by reason of death, resignation, disqualification or otherwise, the remaining members of the committee shall, at the next scheduled meeting, elect a successor to serve for the unexpired term.

In the case of the vacancy of any member of the committee by reason of death, resignation, disqualification or otherwise, the committee shall petition appropriate authority to appoint a replacement.

In the case of unexcused absenteeism by any member of the committee, three consecutive unexcused absences from the committee meetings shall be considered a de facto resignation by that member.

SECTION 5.5.0.0.

PROCEDURES FOR OBTAINING AND MAINTAINING A LICENSE

SECTION 5.5.1.0.

License Application. Every person, firm or corporation desiring to engage in the business of drilling or reworking water wells, drilling monitoring wells, heat pump wells or holes, geotechnical boreholes and/or plugging and abandoning wells or holes, excluding oil and gas wells, in the State of Louisiana, shall file an application (see Appendix V) with the Department for a contractor's (driller's) license, using form provided by the Department, setting out qualifications therefore and such other information as may be required by the Department.

The application must be completed in its entirety, notarized and submitted to the Department with the required license fee (see Section 5.5.3.0.). Applications which are not properly completed, notarized, or accompanied with the required license fee or are illegible, will not be accepted by the Department.

Applications received by the Department will be reviewed by the advisory committee during their regular quarterly meetings (see Section 5.4.1.0.). The committee will then recommend to the Department, which applications should be accepted or rejected by the Department.

If an application is approved, the Department will notify the applicant of the date, time and place where he may appear for the licensing examination, as required by Section 5.5.4.0. If the application is rejected, the Department will notify the applicant in writing and will return the license fee if requested by the applicant.

SECTION 5.5.2.0.

License Renewal. All licenses issued by the Department shall expire on June 30 of each year and shall be renewable annually, without qualifying examination, upon submission of a completed license renewal application (see Appendix V), using form provided by the Department, and upon payment of the required license renewal fee (see Section 5.5.3.0.). Renewal applications, together with the required license renewal fees, must be received by the Department no later than June 30 of each year. Such application shall have the effect of extending the validity of the current license until the renewal certificate or the new license is received, or the applicant is notified in writing by the Department that the renewal of license has been refused.

Contractors (drillers) who fail or refuse to submit their license renewal applications with the applicable annual renewal fees to the Department by June 30 of each year or submit their applications with "N.S.F." or "Account Closed" checks, will be considered delinquent and they will be dropped from the roster of licensed drillers. Thereafter, the license may be renewed only upon receipt of the completed renewal application, payment of the applicable renewal fee, plus a penalty of Five ($5.00) Dollars for each month that the contractor (driller) was delinquent.

Delinquency in excess of one year may, at the discretion of the advisory committee, be deemed as a waiver of the contractor's right for renewal, and if he should apply thereafter, the Department may require that he be considered

as a new applicant, including the requirement for examination. Any person whose license has been revoked may, upon application for a new license, be required, at the discretion of the advisory committee, to take the examination and in all other ways be considered as a new applicant.

SECTION 5.5.3.0.

License And Annual Renewal Fees.

A) Those persons, firms or corporations who drill or rework water wells, drill monitoring wells, geotechnical boreholes, heat pump wells or holes, and/or plug abandoned wells or holes, excluding oil and gas wells, shall pay a license fee and an annual renewal fee of One Hundred ($100.00) Dollars.

B) Those persons, firms or corporations who drill only domestic water wells (as defined in Appendix I) and who drill less than 25 domestic wells annually, shall pay a license fee and an annual renewal fee of Fifty ($50.00) Dollars.

Fees shall be paid either by check or money order; cash payments will not be accepted. The Department will deposit all fees in a special fund in the office of the State Treasurer to be used for the implementation of this chapter.

A contractor's (driller's) license shall apply to all drillers employed by that contractor. A license fee or an annual renewal fee shall be required for each license issued or renewed.

SECTION 5.5.4.0.

Licensing Examination. Any applicant who submits an application after June 30, 1981 will be required, upon approval of his application, to successfully pass an examination prepared and administered by the Department.

If the application is approved, the Department will notify the applicant of the date, time and place where he may appear for the examination. The examination will be written, and a fee of Ten ($10.00) Dollars (check or money order only) will be collected from each applicant taking the exam. Any applicant who fails an examination may apply for a subsequent exam but must pay the examination fee each time he takes the exam.

At the discretion of the Department, an applicant may be given an oral exam instead of a written exam. Request for oral examination must be sent to the Department prior to the exam date so that appropriate arrangements can be made.

SECTION 5.5.5.0.

Qualifications and Requirements. To qualify for a license, the applicant must be at least eighteen years of age, be of good moral character, have a minimum of two (2) years of drilling experience under the supervision of a licensed water well contractor or other comparable drilling experience acceptable to the Department, and demonstrate to the satisfaction of the Department, a reasonable knowledge of the Water Well Rules, Regulations and Standards, State of Louisiana. The license application form must state the applicant's work experience and the names and addresses of two licensed contractors (drillers) familiar with the applicant's experience. The advisory committee will review each application received by the Department and will

then make recommendations as to which applications should be accepted or rejected by the Department. The license application must be approved by the Department before the applicant can take the licensing examination.

SECTION 5.5.6.0.

Requirements for Maintaining a License. In order to maintain a Louisiana drilling license, the contractor shall abide by the rules and regulations stated herein as well as all rules and regulations promulgated by the Department for the construction, registration, plugging and abandonment of wells and holes. A drilling license is not transferable and shall only be used by the driller or the contractor who is duly authorized by the Department to use such a license.

SECTION 5.5.6.1.

Record Keeping. The contractor (driller) shall keep accurate records on each well or hole drilled or plugged including, but not limited to, its location, depth, character of formations drilled, fluids encountered and such other reasonable information as the Department may specify. The contractor shall, within thirty (30) calendar days after completion of each well or hole, file a registration or plugging form with the Department as per requirements of Chapters I and III, of the Water Well Rules, Regulations and Standards, State of Louisiana.

SECTION 5.5.6.2.

Vehicle and Equipment Identification

It shall be the responsibility of the licensed contractor to ascertain that the rig(s) and service vehicle(s) used in his drilling operation are plainly and legibly marked with an identification number visible at all times. The identification number to be used shall be the license number of the

contractor responsible for the drilling operation. The license number shall be printed on each side of every rig and service vehicle in numerals of not less than two inches high, in a color sufficiently different from the color of the vehicle so that the number is plainly legible.

SECTION 5.6.0.0.

RECIPROCITY AND RESIDENCY REQUIREMENTS

The Department, upon receipt of an application and the required license fee, will issue a license to any person, firm or corporation who holds a valid driller's license from any other state, provided the standards under which the license was issued are at least equivalent to those of Louisiana and provided that the state which issued the license will accord similar privileges to the licensed Louisiana drillers who may wish to apply for a license from that state.

Residency requirements for out-of-state applications shall be the same as those required for Louisiana drillers in the applicant's state of residency.

SECTION 5.7.0.0.

REVOCATION OF LICENSE

The grounds for revoking a well driller's license shall be as follows (R.S. 38:3098.4):

1. That he has intentionally made a material misstatement in the application for such license; or
2. That he has willfully violated any provisions of this Chapter; or
3. That he has obtained, or attempted to obtain, such license by fraud or misrepresentation; or
4. That he has been guilty of fraudulent or dishonest practices; or

5. That he has demonstrated lack of competence as a driller of water wells; or

6. That he has failed or refused to file reports as required under the provisions of this chapter; or

7. That he has willfully and contumaciously refused to obey reasonable orders, rules and regulations of the Department of Transportation and Development, Office of Public Works.

SECTION 5.8.0.0.

VIOLATIONS AND HEARINGS

Provisions addressing enforcement of this Chapter appear in Louisiana Revised Statute 38:3098.3, as follows:

A) If the Department of Transportation and Development, Office of Public Works has reasonable grounds for believing that there has been a violation of this chapter or any rules or regulations adopted pursuant thereto, the Department shall give written notice to the person alleged to be in violation and shall conduct a hearing on such alleged violation, such hearing to be conducted in accordance with the Administrative Procedure Act in Title 49. Such notice shall identify the provisions of this Chapter or regulation issued hereunder alleged to be violated and the facts alleged related thereto. The notice shall be served in the manner required by law for the service of process upon a person in a civil action, and may be accompanied by an order of the Department requiring described remedial action which, if taken within the time specified in such order, will effect compliance with the requirements of this chapter and regulations issued thereunder. Such order shall become final

within thirty days from the service thereof unless a request for hearing as provided elsewhere in this chapter is made within such time. In lieu of such order, the Department may require the persons named in such notices to appear at a hearing at a time and place specified in the notice.

B) If the Department of Transportation and Development, Office of Public Works, finds that any provision of this chapter has been violated and that disciplinary action by the Department is insufficient or unavailable, it shall be the duty of the said Department to proceed with enforcement of this chapter by proper proceedings through any court of competent jurisdiction.

Also, in addition to the above, grounds for revoking a driller's license appear in R.S. 38:3098.4 (see Section 5.7.0.0.)

SECTION 5.8.1.0.

Enforcement Actions.

A) Penalties that are applicable to drillers who have either failed to obtain a license or who have violated any provisions of this chapter appear in Louisiana Revised Statutes 38:3098.7, as follows:

> Any person, firm, or corporation who engages in or follows the business or occupation, or advertises, holds itself out, or acts temporarily or otherwise as a well driller without having first secured the required license or renewal thereof, or who otherwise violates any provisions of this chapter shall be guilty of a misdemeanor and upon conviction shall be fined not less than One Hundred Dollars and not more than One Thousand

Dollars within the discretion of the court; and each day in which such violation exists or continues shall constitute a separate offense.

In addition to the penalties prescribed herein, any person who violates any order of the Department requiring described remedial action as set out elsewhere in this chapter, which shall specify a time requirement for compliance with such order, shall be subject to a penalty not to exceed One Hundred Dollars for each day such noncompliance continues.

SECTION 5.8.2.0.

Falsification of Documents. Falsification of documents to evade regulations, as well as penalties for said falsifications, appears in Louisiana Revised Statutes 38:3095, as f llows:

A) No person shall, for the purpose of evading this chapter or any rules, regulations or order made thereunder:

(1) Make or cause to be made any false entry or statement of fact in any report required to be made by this chapter or by any rule, regulation or order made hereunder; or

(2) Make or cause to be made any false entry in any account, record, or memorandum kept by any person in connection with the provisions of this chapter or of any rules, regulation or order made thereunder; or

(3) Remove out of the jurisdiction of the state, or destroy or mutilate, alter, or by any other means, falsify any book, record or other paper, pertaining to the matters regulated by this chapter or by any rule, regulation or order made thereunder.

B) Whoever violates this section shall be fined not more than Five Thousand Dollars or imprisoned not more than six months, or both.

The penalty provision for falsification of documents required under the provisions of this chapter are therefore criminal in nature and must be enforced through the District Attorney having jurisdiction where said violation occurs.

It should also be noted that utilization of the United States Mail in the falsification of documents constitutes a violation of Title 18 of the United States Code (Mail Fraud) and such violations will be referred to the appropriate Unites States Attorney.

SECTION 5.8.3.0.

Appeals. An alleged violator may appeal any order of the Department by requesting a hearing. The hearing request must be made to the Department, in writing, within thirty (30) calendar days of the original order and must be sent by "Certified Mail -- Return Receipt Requested". After receiving the request, the Department will arrange a hearing to determine what other remedial action will serve to effect compliance with the rules and regulations.

APPENDIX I
GLOSSARY OF TERMS

GLOSSARY OF TERMS

(Number in parentheses is reference which is source of definition)

Abandoned Well: A well is considered to be abandoned if its use has been permanently discontinued; its pumping equipment has been permanently removed; the well is in such a state of disrepair that it cannot be used to supply water, and/or has the potential for transmitting surface contaminants into the aquifer; the well poses potential health or safety hazards or the well is in such a condition that cannot be placed in the active, standby or inactive status.

Active Well: A well is considered to be active if it is an operating well used to supply water.

Annular Space: The space between the drill hole and the well casing.

Aquifer: A formation, group of formations, or a part of a formation that contains sufficient saturated material to yield significant quantities of water to wells. (5)

Aquifer Test: Aquifer or pumping tests are made in water wells to obtain information about the performance and efficiency of the well being pumped, and/or to obtain data from which the hydraulic characteristics of the aquifer can be calculated. The test made to determine hydraulic characteristics of an aquifer is usually referred to as "aquifer test."

Artesian (Confined Ground Water): When the water level rises above the top of the aquifer which the well taps, the aquifer is assumed to be "artesian." An artesian well flows only when the water level is above land surface. (5)

Assistant Secretary: The Assistant Secretary of the Department of Transportation and Development, Office of Public Works, or his designee.

Bacteriological Analysis: This analysis, usually for drinking water, consists of a laboratory report indicating the presence or absence of coliform bacteria in a given water sample, as determined by laboratory procedure.

Bentonite Slurry: A mixture of bentonite and water, weighing not less than nine (9) pounds per gallon.

Casing: A tubular retaining structure, generally metal or PVC, which is installed in a drilled, bored, driven, or augered hole to maintain the well opening.

Cement-Bentonite Slurry: A mixture of cement, bentonite and water, consisting of not more than eight percent bentonite by dry weight of cement and a maximum of ten gallons of water per sack (94 pounds) of cement. Additives, in the approved and proper ratio, may be added to the slurry if required.

Chemical Analysis: A chemical analysis is usually a report of dissolved minerals in the water and the water's physical properties, such as temperature and color. The minimum chemical properties that are usually determined are hardness, specific conductance, hydrogen-ion concentration (pH), dissolved solids, chloride, bicarbonate, iron, fluoride and nitrate.

Coarse Ground Bentonite: A processed bentonite used to seal well casings and to plug holes. Coarse ground bentonite is placed by pouring from surface or pumping from the bottom to surface. An approved inorganic polymer may be used to retard swelling of the bentonite.

Community Public Supply Water Well: A public supply well which serves at least fifteen service connections used by year-round residents or regularly serves at least twenty-five year-round residents. A community public supply well may be owned by a municipality or community, a water district, a corporation, a private individual or by a local, state or federal governmental agency.

Contaminant: Any undesirable physical, chemical, biological, or radiological substance or matter in water. (6)

Contamination: Any introduction into water of microorganisms, chemicals, wastes, or waste-water in a concentration that makes the water unfit for its intended use. (4)

Contractor: The word "contractor" in these regulations is used to refer to any person, firm or corporation who is licensed to engage in the business of drilling, reworking or installing water wells, monitoring wells, heat pump wells or holes, geotechnical boreholes, and/or plugging and abandoning wells or holes, excluding oil and gas wells.

Department: The Louisiana Department of Transportation and Development, Office of Public Works.

Dewatering Well: A water well installed to dewater an aquifer or lower a water table in order to allow construction or mining activities.

Disinfection: The killing of a large proportion of microorganisms in or on a substance with the probability that all pathogenic microorganism will be killed.

Ditch: A man-made excavation dug to convey surface water for drainage purposes or irrigation.

Director or a Board: See **Assistant Secretary.**

Domestic Well: A water well used exclusively to supply the household needs of the owner/lessee and his family. Uses may include drinking, cooking, washing, sanitary purposes, lawn and garden watering and caring for pets.

Drawdown: The difference, usually in feet, between the static (non-pumping) water level and the pumping level in a well after the well has been pumped for a specified period of time.

Drill Cuttings: Samples of the material obtained during drillings and are the source of lithologic information needed for proper selection of screen openings. A principal objective of drilling test holes is to obtain samples. (1)

Driller: See **Contractor.**

Drilling: The word "drilling" in these regulations is used to refer to the drilling, boring, coring, driving or augering of a well or hole.

Drilling Contractor: See **Contractor.**

Driller's Log: A driller's log is the driller's description of the geologic strata encountered, their thickness and depth. (1)

Drilling Mud: A fluid composed of water and clay (either native clay or a combination of native and commercial clays) used in drilling operations to remove cuttings from the hole, to clean and cool the bit, to reduce friction between the drill stem and the sides of the hole, to seal the sides of the hole, to prevent caving, bridging or loss of circulation, and to prevent the interchange of water between aquifers. When permitted, drilling mud may be used as filler or plugging material, provided it weighs not less than nine (9) pounds per gallon.

Electrical Log: A record of the resistivities of the subsurface formations and the contained fluid and spontaneous potentials generated in the borehole, both plotted in terms of depth below some datum, such as land surface. Similar logs commonly made in boreholes are the induction logs. Other borehole geophysical logs that also may be available are the gamma ray, caliper and neutron logs.

Flood Prone Area: An area subject to a 100 year flood level as established by the administering agency for the Federal Flood Insurance Program.

Free Flowing Water Well: An artesian well which is allowed to flow, under natural conditions, at or above the ground surface.

Geopressured Aquifer: A term used for an aquifer, especially in the Gulf Coast Area, in which the fluid pressure exceeds the normal hydrostatic pressure of 0.465 pounds per square inch per foot of depth. (2)

Geotechnical Borehole: An exploratory borehole drilled, augered, bored or cored to obtain soil samples to be analyzed for chemical and/or physical properties.

Geothermal: Pertaining to the internal heat of the earth.

Gravel-Packed Well: A well in which properly graded gravel or coarse sand is hydraulically placed in the area immediately surrounding the screen or slotted pipe used as a screen to increase the effective diameter of the well, to stabilize the aquifer and to prevent sand from entering the well.

Ground Water: Water percolating below the earth's surface.

Health Hazard: Any condition that may create a danger to public health and well being.

Heat Pump Hole: A hole drilled to install piping for an earth-coupled water source heat pump system, also known as a vertical closed-loop system.

Heat Pump Supply Well: A water well which supplies ground water to a heat pump heat exchanger.

Industrial Well: A well used to supply water for plants that manufacture, process or fabricate a product. The water may or may not be incorporated into the product being manufactured. The water is usually used to cool machinery, to provide sanitary facilities for employees, to air condition the plant, and water grounds at the plant. Water used for mining or processing ore, such as gravel, is included in the industrial category.

Inactive Well: A well is considered to be inactive if it is not presently operating but is maintained in such a way that it can be put back in operation with a minimum of effort to supply water.

Irrigation/Agricultural Well: A well used for irrigating cultivated plants, for watering stock, for crawfish and catfish farming, and for similar agricultural activities. Most irrigation wells supply water for farm crops, but this category also includes wells that are used for watering parks, golf courses, cemeteries and wells which are used exclusively for watering lawns in urban areas.

Lessee: See **Owner.**

Monitoring Well: A well used to obtain hydrologic and water quality data, usually installed at or near a known or potential source of ground water contamination.

Neat Cement: A mixture of cement and water, consisting of not more than five (5) gallons of water per sack (94 pounds) of cement.

Noncommunity Public Supply Well: A public supply water well which serves either fewer than fifteen service connections or fewer than twenty-five year-round residents or no year-round residents. Examples of the former case are small public water supplies for mobile home parks, subdivisions, etc. which fall below the 15 connections/25 persons criteria for community water supplies. The latter case includes public water supplies which serve no year-round residents, such as bars and lounges, motels, camps, office buildings, restaurants, rest stops, service stations, recreational facilities, schools, commercial establishments, etc.

Observation Well: A well used by the owner, by governmental agencies, or by an appropriate engineering or research organization to obtain information on the water resources of an area.

Owner: Individual, corporation, association, partnership, institution or governmental agency who is either the legal owner of the property on which the well or hole is located or is holding a long-term lease on the property.

Permeability: A measure of the relative ease with which porous media can transmit a liquid under a potential gradient. Sands have a higher permeability than clays.

Pilot Hole: A hole drilled with the intent to install casing and to produce water. It is usually of a smaller diameter than the proposed well and has to be reamed to a larger diameter for the installation of casing and screen.

Private Well: See **Domestic Well.**

Plumbness: The variation with depth of the center line of the well from a vertical line drawn through the center of the well at the top of the casing. (3)

Pollution: A condition created by harmful or objectionable material in water. (4)

Potable Water: Water whose bacteriological, physical and chemical properties make it suitable for human consumption.

Power Generation Well: A well used to supply water for generation of any type of power.

Public Supply Water Well: A well which provides water for drinking, cooking or washing use by the public, or transients, or by persons other than the immediate family of the owner of the supply. A public supply water well may be either a community water well or a noncommunity water well.

Pump-Down Method: A positive displacement method for placing grout or slurry material by pumping or forced injection by air pressure.

Pumping Test: See **Aquifer Test.**

Pumping Water Level: The water level in a well which is being pumped, usually expressed in feet above or below a specific datum, such as land surface.

PVC Well Casing: A polyvinyl chloride plastic pipe conforming to current AWWA Standard A-100 and/or ASTM F-480 Standard for water well casing.

Registered Permit Plat: A Land Surveyor's plat showing Section, Township, Range, and the distances from the section lines to the location of the well (oil, gas, injection, etc). The permit plat is submitted to the Office of Conservation with the oil or gas well permit application.

Registered Well: An inventoried well that has been assigned an identification number by the Department and whose records are available.

Reworking Water Well: Rehabilitation or modification of a water well to increase its efficiency, restore its capacity, and/or improve its water quality. Methods of reworking water wells include removing and replacing the screen, regravel packing the screen, placing a new screen within the old screen, placing a liner pipe within the old casing or redeveloping a well by surging, acidizing, jetting, etc.

Rig-Supply Well: A water well drilled at an oil or gas drilling site to supply water for drilling and/or other oil field related activities.

Saline Water: Water with a dissolved solids content of 1,000 milligrams per liter (parts per million) or more.

Sanitary Seal: A suitable threaded, flanged, or welded water-tight cap or compression seal installed at the top of the well casing so as to prevent the entrance of contaminated water or other objectionable material into the well.

Sanitary Sewer: An underground conduit that conveys domestic, commercial or industrial sewage.

Screen: A structural tubular retainer, usually metal or PVC, used to support the hole in unconsolidated material with openings which are selected on the basis of adopted standards, and which allows sand free water to flow freely into the well in ample quantities and with a minimum loss of head. In agricultural wells, slotted pipe is sometimes used as a screen.

Seepage: The slow movement of water and/or other fluids through the soil into the sub-surface.

Septic Tank: An underground water-tight tank which receives sewage.

Specific Capacity: The rate of discharge of water from a well divided by the drawdown of water level within the well for a specified period of continuous pumping of the well. It is usually expressed as "gallons per minute per foot of drawdown after (specified) hours of continuous pumping".

Standby Well: A well is considered to be standby if it is used in emergencies or occasionally used to supply water.

Static Water Level: Static water level is the non-pumping water level in a well that has not been in operation for a period of time and is usually expressed in feet above or below a specified datum, such as land surface.

Stream: A natural channel or water course which conveys surface and subsurface runoff.

Storm Sewer: An underground conduit used for conveying surface water.

Subsidence: A local mass movement that involves principally the downward settling or sinking of the earth's surface with little or no horizontal motion. (2)

Subsurface Absorption Fields: An underground area containing a bedding of aggregate with distribution lines to permit disposal of septic tank effluent.

Test Hole: An exploratory borehole drilled to obtain geologic, hydrologic and water quality data.

Test Well: See **Test Hole.**

Underground Injection: The subsurface implacement of fluids by well injection. (6)

Underground Water: See **Ground Water.**

Uniformity Coefficient: The uniformity coefficient is the number expressing the ratio of the 40 percent size of the material to its 90 percent size. Size refers to the percentage by weight retained on a given sieve.

Vent (Breather Pipe): A screened outlet at the upper end of the well casing to allow equalization of air pressure in the well and the escape of gases.

Water Well Contractor: See **Contractor.**

Well Cap: A removable, usually water-tight device used to cover an opening into the well casing and is threaded, bolted or otherwise attached to the casing to prevent easy entry by other than the owner and to prevent the entrance of any contaminant or other objectionable material into the well.

REFERENCES

1. Campbell, M. D. and Lehr, H., Jr., 1973, Water Well Technology. McGraw-Hill, New York, N.Y.

2. Gary, M.; McAfee, R., Jr. and Wolf, C. L., editors, 1972, Glossary of Geology, American Geological Institute, Washington, D.C.

3. Gibson, U. P. and Singer, R. D., 1971, Water Well Manual. Premier Press, Berkely, CA.

4. Ingram, W. T., et. al.; editors, 1969, Glossary of Water and Waste-Water Control Engineering.

5. Lohman, S. W., et. al., 1972. Definitions of Selected Groundwater Terms - Revisions and Conceptual Refinements: U.S. Geological Survey Water-Supply Paper, 1988.

6. Public Law 93-523, 93rd Congress, December 16, 1974, 34p.

APPENDIX II
INSTRUCTIONS FOR COMPLETING
WATER WELL REGISTRATION LONG FORM (DOTD-GW-1)

INSTRUCTIONS FOR COMPLETING WATER WELL

REGISTRATION LONG FORM (DOTD-GW-1)

The Water Well Registration Long Form (DOTD-GW-1) consists of a set of three (3) copies. The first copy (marked DOTD copy) is to be mailed by the water well contractor within thirty (30) calendar days after the well has been completed to:

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
Attn: Chief - Water Resources Section
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245

The second copy of the form is to be retained by the water-well contractor for his files, and the third copy is to be given to the well owner immediately upon completion of the work.

Although most of the information needed to complete the form is available to the water well contractor, the following explanation will provide clarification of intent and uniformity of reporting:

ITEM 1. OWNER: List the name of the legal owner of the property on which the well is located or the person or company holding a long-term lease on the property. If the owner or lessee is an individual, list first and last names and middle initial of individual. List area code and telephone number of owner in the spaces provided.

ADDRESS: The address should be that of the owner. If the well is owned by an industry, the local address of the firm is preferred in order that additional data on the well may be easily obtained by the state or a regional water district or commission.

OWNER'S WELL NUMBER: Many cities, institutions, industrial plants, and large farms have their own system of designating or identifying wells by number and/or name. This information is useful when locating the well and should be entered on the form.

ITEM 2. LOCATION OF WELL: List the parish where the well is located, including the nearest town, city, etc., and give directions to the well site. The location of the well should be described in detail and as accurately as possible so that the well can be easily located by the Department's field inspector. Please draw a sketch on the back side of the original form, showing location of well with reference to roads, railroads, buildings, etc. Use an (X) to indicate location of the well. Show location of nearest existing well(s), if any nearby, by marking (O's), and approximate distance between wells.

ITEM 3. WELL INFORMATION: Required data are available from water well contractor's and/or engineer's report.

ITEM 4. CASING AND SCREEN INFORMATION: Required data are available from water well contractor's and/or engineer's report. By type of screen indicate whether it is "bar lug" rib type, slotted pipe, etc. State whether casing is plastic or metal. Indicate the depth to which the annular space was cemented and state method of cementing.

ITEM 5. WATER LEVEL AND YIELD INFORMATION: Most of the information entered in this item can usually be obtained from the water well contractor's or engineer's report. Except for "static water level," the terms need no explanation. Static water level is "the non-pumping water level in a well that has not been in operation for a period of time and is usually expressed in feet above or below a specified datum, such as land surface". The owner should be able to provide information on proposed use and pumping rate.

ITEM 6. USE OF WELL: The principal purpose for which water from the well is used should be indicated by checking the appropriate box on the form. If water is used for more than one purpose, only the principal or primary use should be shown. If the planned use of water is unknown or does not fit one of the specified uses, this should be noted in the space marked "OTHER". Following are explanations of the terms used on the well registration form to indicate the principal use of water from a well:

IRRIGATION/AGRICULTURAL - Refers to the use of water to irrigate cultivated plants, to water stock, for crawfish and catfish farming, and for similar agricultural activities. Most irrigation wells supply water for farm crops, but this category also includes wells that are used for watering parks, golf courses, and cemeteries. Occasionally a home owner in an urban area has a well used solely for watering a lawn. This well also should be in the agricultural and irrigation category.

INDUSTRIAL - Includes plants that manufacture, process or fabricate a product. The water may or may not be incorporated into the product being manufactured. Industrial water may be used to cool machinery, to provide sanitary facilities for employees, to air condition the plant, and water grounds at the plant. Water used for mining or to process ore such as gravel pits is included in the industrial category. Planning and water-use needs can be implemented by dividing this category into the following STANDARD INDUSTRIAL CATEGORIES that predominate in Louisiana. Please refer to bottom of the water well registration form and indicate the principal category of industrial use. The categories are defined as follows:

Food and Kindred Products. This group includes establishments manufacturing foods and beverages for human consumption and certain related products, such as manufactured ice, vegetable oils, animal fats and oils, and prepared feeds for animals and fowl.

Textile Mill Products. This major group includes establishments engaged in performing any of the following operations: (1) preparation of fiber and subsequent manufacturing of yarn, thread, braids, twine and cordage; (2) manufacturing broad woven fabric, narrow woven fabric, knit fabric, and carpets and rugs from yarn; (3) dyeing and finishing fiber, yarn, fabric, and knit apparel; (4) coating, waterproofing, or otherwise treating fabric; (5) the integrated manufacture of knit apparel or other finished articles from yarn; and (6) the manufacture of felt goods, lace goods, bonded-fiber fabrics, and miscellaneous textiles.

Lumber and Wood Products (except furniture). This major group includes sawmills, lath mills, shingle mills, cooperage stock mills, planing mills, and plywood and veneer mills engaged in producing lumber and wood basic materials; and establishments engaged in manufacturing finished articles made entirely or mainly of wood or wood substitutes.

Paper and Allied Products. This major group includes the manufacture of pulp from wood and other cellulose fibers and rags; the manufacture of paper and paperboard; and the manufacture of paper and paperboard into converted products such as paper coated paper bags, paper boxes and envelopes.

Chemicals and Allied Products. This major group includes establishments manufacturing products by predominantly chemical processes. Establishments classified in this major group manufacture three general classes of products: (1) basic chemicals such as acids, alkalies, salt, and organic chemicals; (2) chemical products to be used in further manufacture such as synthetic fibers, plastic materials, dry colors, and pigments; (3) finished chemical products to be used for ultimate consumption such as drugs, cosmetics and soaps; or to be used as materials or supplies in other industries such as paints, fertilizers, explosives. The mining of natural rock salt is classified in mining industries. Establishments primarily engaged in manufacturing nonferrous metals and high percentage ferroalloys are classified in the Primary Metals category and baking powder; other leavening compounds and starches in the Food and Kindred Products category. Establishments primarily engaged in packaging, repackaging, and bottling of purchased chemical products are classified in traded industries of the standard industrial categories. Plastic materials and synthetic rubber are included in this category.

Petroleum Refining and Related Industries. This major group includes establishments engaged in petroleum refining, manufacturing paving and roofing materials, and compounding lubricating oils and greases from purchased materials. Establishments manufacturing and distributing gas to consumers are classified in public utilities industries, and those primarily engaged in producing coke and by-products in primary metals category.

Primary Metal Industries. This major group includes establishments engaged in the smelting and refining of ferrous and nonferrous metals; in the manufacture of castings, forgoings, and other basic products of ferrous and nonferrous metals, and in the manufacture of nails, spikes, and insulated wire and cable. This major group also includes the production of coke.

Other. Please name the principal industrial output from the industry if not listed in the industrial categories on the form.

PUBLIC SUPPLY - Refers to a well which provides water for drinking, cooking, or washing use by the public or transients, or by persons other than the immediate family of the owner of the supply. A public supply water well may either be a community water well or a non-community water well, as follows:

Community Public Supply Water Well. A public supply well which serves at least fifteen service connections used by year-round residents or regularly serves at least twenty-five year-round residents. A community public supply well may be owned by a municipality or community, a water district, a corporation, a private individual or by a local, state or federal governmental agency.

Non-Community Public Supply Well. A public supply water well which serves either fewer than fifteen service connections or fewer than twenty-five year-round residents or no year-round residents. Examples of the former case are small public water supplies for mobile home parks, subdivisions, etc. which fall below the 15 connections/25 persons criteria for community water supplies. The latter case includes public water supplies which serve no year-round residents,

such as bars and lounges, motels, camps, office buildings, restaurants, rest stops, service stations, recreational facilities, schools, commercial establishments, etc.

Because public supply use includes many categories of use, requirements for planning and water-use surveys require a further break-down of this use; thus, public supply use is divided into the following categories: (A list is provided at the bottom of the registration form so that the user may check the appropriate category of public supply use.)

Municipal - This category includes all wells used to supply the drinking, sanitation, and other needs of an urban area, e.g., Lake Charles, Ruston, etc. The well is generally owned by a utility company, a municipality or private individual.

Rural - The wells are used for the drinking sanitation, and other needs of a rural area. Such systems generally are operated by a local water district or by private individuals.

Commercial - Wells that are used principally to supply a motel, hotel, restaurant, office complex, swimming pool, ice rink or other recreational facility; drive-in, trailer park or public summer camp. Where water is used commercially in the making of bottled drinks, the wells are in this category.

Therapeutic - Water that is used primarily for bathing and/or drinking and is purported to have therapeutic value is in this category. Water that is bottled and sold falls into this category, mainly because of its claimed therapeutic value.

Institutional/Government - Refers to wells used specifically in the maintenance and operation of an institution such as large schools, churches, universities, hospitals, rest homes, penal institutions, and other governmental installations.

Other - A well that is used for a purpose that does not fit into the above categories. Give details.

POWER GENERATION - Refers to a well used to supply water for generation of any type of power.

DEWATERING WELL - This is a water well installed to de-water an aquifer or lower a water table in order to allow construction or mining activities.

OBSERVATION - Refers to a well used by the owner, by governmental agencies, or by an appropriate engineering or research organization to obtain information on the water resources of an area.

TEST HOLE - An exploratory borehole drilled to obtain geologic, hydrologic and water quality data.

OTHER - A well that is used for a purpose that does not fit into either the above categories or those listed on the short form (DOTD-GW-1S).

ITEM 7 AVAILABLE INFORMATION: Please check the appropriate boxes to indicate whether the specified logs or data were collected; if so, attach copies to the registration form for transmittal to the Department.

ITEM 8 ABANDONMENT INFORMATION: If the well is new, specify whether or not it replaces an existing well. The water well contractor is responsible for informing the owner of the well of state regulations requiring plugging of abandoned wells. Check appropriate box, as this item is intended to serve as a reminder.

ITEM 9 REMARKS: This space can be used for presenting any other pertinent information, such as name of consulting engineer, screen openings, pump information, name of sub-contractor, etc.

ITEM 10. DRILLER'S LOG: Give a description of the materials encountered and depth. If space on front of the form is insufficient, continue driller's log on reverse side of original form or attach a copy of the driller's log to the original form to be transmitted to the Department.

After completing all items, list the name of the water well contracting company and the license number on the spaces provided in the upper right-hand corner of the form. Sign and date the form and mail the original to the Department at the address listed on the form within thirty (30) calendar days

after the well has been completed. The owner's copy shall be given to the owner immediately upon completion of the work. The contractor's copy shall be retained by the contractor for his files.

If there are any questions, please call or write to:

Louisiana Department of Transportation and Development
Attn: Chief, Water Resources Section
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245
Telephone (504) 379-1434

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER-WELL REGISTRATION LONG FORM (DOTD-GW-1)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. Well Owner: _____ Phone ( )

Address: _____

_____

Owner's Well Number or Name (If Any) _____

2. LOCATION OF WELL: Parish: _____ Well is Near, _____ (Town, City)

Approximately _____ miles from _____ (Crossroads, Railroad, Any Landmark, etc.)

_____

(Please draw sketch on back of Original Form)

3. WELL INFORMATION: Ground Elevation _____ ft. M.S.L., Depth of Hole: _____ ft.

Diameter of Hole _____ in. Depth of Completed Well: _____ ft.

Is well gravel-packed? YES ☐ NO ☐

Date Completed: _____

4. CASING AND SCREEN INFORMATION:

CASING: TYPE _____	SCREEN: TYPE _____
_____ in. from _____ ft. to _____ ft.	_____ in. from _____ ft. to _____ ft.
_____ in. from _____ ft. to _____ ft.	_____ in. from _____ ft. to _____ ft.
_____ in. from _____ ft. to _____ ft.	_____ in. from _____ ft. to _____ ft.

Extension Pipe _____ in. from _____ ft. to _____ ft.

Cemented from _____ ft. to ground surface.

Pumpdown cementing method used: Inside casing ☐ Outside casing ☐

5. WATER LEVEL AND YIELD INFORMATION: On _____ (Date) the static water level in well was _____ ft. ☐ below ☐ above ground surface. How determined? _____

_____ The well yielded _____ gpm with a draw down of _____ ft. after _____ hours of continuous pumping on (date) _____. Describe how yield was measured _____ It is planned to pump the well at a rate _____ gpm for _____ hours per day for _____ days per year. Proposed average daily pumping rate: _____ gallons. Motor HP _____ Pump setting _____ ft.

6. USE OF WELL (Check Appropriate Box)

Irrigation/Agricultural ☐ Industrial ☐ Community Public Supply ☐ Non-Community Public Supply ☐ Power Generation ☐

Dewatering ☐ Observation ☐ Test Hole ☐ OTHER ☐ (Please Specify) _____

(If industrial or public supply is checked please see bottom of this form)

7. AVAILABLE INFORMATION (Check Appropriate Boxes)

	YES	NO	
Is an electrical log or other borehole geophysical log available?	☐	☐	(If yes, please attach a copy of log)
Is a mechanical analysis of the drill cuttings available?	☐	☐	(If yes, please attach a copy)
Is a chemical analysis of water available?	☐	☐	(If yes, please attach a copy)
Is a bacteriological analysis available?	☐	☐	(If yes, please attach a copy)
Are aquifer test results available?	☐	☐	(If yes, please attach a copy)

8. ABANDONMENT INFORMATION: (Check Appropriate Boxes)

If well is new does it replace an existing well? YES ☐ NO ☐ If yes, has owner been informed of state regulations requiring plugging of abandoned wells? YES ☐ NO ☐

9. REMARKS (Such as engineer, pump information, acreage irrigated, water well subcontractor and license no., etc.) _____

_____

_____

10. DRILLER'S LOG (Description and color of cuttings, such as, shale, sand, etc. in feet below ground level)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION

(If necessary, continue log on back of original form.)

PUBLIC SUPPLY: (If well is for public-supply purpose please check one of the following to indicate principal category of public-supply use.)

☐ Municipal ☐ Therapeutic

☐ Rural ☐ Institutional/Government

☐ Commercial ☐ Other _____ Please Specify

INDUSTRIAL: (If well is for industrial purpose please check one of the following to indicate the standard industrial category representing the principal industrial use).

☐ Food and Kindred Products ☐ Paper and Allied Products

☐ Textile Mill Products ☐ Chemicals and Allied Products

☐ Lumber & Wood Products (Except Furniture). ☐ Petroleum Refining & Related Industries

☐ Other _____ Please Specify ☐ Primary Metal Products

Name of Water Well Contractor

License Number WWC-_____

Authorized Signature (Date)

MAIL ORIGINAL TO
Department of Transportation and Development
Attn: Chief-Water Resources Section
P.O. BOX 94245
BATON ROUGE, LA. 70804-9245
(504) 379-1454

FOR OFFICE USE ONLY

STATE 22 (1 2) PARISH (3 5) LOCAL WELL NO. (6 11)

IDENTIFICATION NUMBER (12 26)

OWNER'S NAME (27 41)

WELL DEPTH (42 45) Ft. Use of Well (46 47 48)

Date Completed MO. YR. (49 52)

OWNER'S NO. (53 56) Geologic Unit (57 64)

Proposed Daily Pumping Rate (66 72)

AVAILABLE INFORMATION (73 74 75 76 77 78)

CONTRACTOR'S NAME

SECTION TOWNSHIP RANGE

REVISED COORDINATES

Hole Depth Elev. Quad. No.

Inspected By _____

Date _____

Remarks _____

DOTD COPY

APPENDIX III
INSTRUCTIONS FOR COMPLETING WATER WELL REGISTRATION SHORT FORM (DOTD-GW-1S)

INSTRUCTIONS FOR COMPLETING WATER WELL

REGISTRATION SHORT FORM (DOTD-GW-1S)

The Water Well Registration Short Form (DOTD-GW-1S) consists of a set of three (3) copies. The first copy (marked DOTD copy) is to be mailed by the water well contractor within thirty (30) calendar days after the well has been completed to:

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
Attn: Chief, Water Resources Section
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245

The second copy of the form shall be retained by the water well contractor for his files and the third copy shall be given to the well owner immediately upon completion of the work.

Although most of the information needed to complete the form is available to the water well contractor, the following explanation will provide clarification of intent and uniformity of reporting:

ITEM 1. USE OF WELL: The principal purpose for which the well is used should be indicated by checking the appropriate box on the form. If the well is used for more than one purpose, only the principal or primary use should be shown.

A) Domestic Well: A water well used exclusively to supply the household needs of the owner/lessee and his family. Uses may include drinking,cooking, washing, sanitary purposes, lawn and garden, watering and caring for pets.

B) Rig Supply Well: A water well drilled at an oil or gas drilling site to supply water for drilling and/or other oil field related activities.

C) Monitoring Well: A well used to obtain hydrologic and water quality data, usually installed at or near a known or potential source of ground water contamination.

D) Heat Pump Supply: A water well which supplies ground water to a heat pump heat exchanger.

E) Heat Pump Hole: A hole drilled to install piping (tubing) material for an earth-coupled water source heat pump system, also known as a vertical closed-loop system.

F) Abandoned Pilot Hole: A hole drilled with the intent to install casing and to produce water but had to be abandoned because of problems related to drilling operations or encountering unsatisfactory formations.

G) Other: A well used for a purpose that does not fit into either the above categories or those requiring a Long Form (DOTD-GW-1).

ITEM 2. OWNER: List the name of the legal owner of the property on which the well is located or the person or company holding a long-term lease on the property. If the owner or lessee is an individual, list first and last names and middle initial of individual. List area code and telephone number of owner in the spaces provided.

ITEM 3. ADDRESS: List full and correct address of the owner.

ITEM 4. OWNER'S WELL NUMBER: List name or number the well owner has assigned to the well.

ITEMS 5-9. WELL INFORMATION: List in appropriate spaces, completion date of well, depth of hole, depth of well, static water level, casing type, size and length, screen size, type and length, the depth to which the casing was cemented, and cementing method used.

ITEM 10. LOCATION OF WELL: List the parish where the well is located, including the nearest town, city, etc., and give directions to the well site. The location of the well should be described in detail and as accurately as possible so that the well can be easily located by the Department's field inspector. Please draw a sketch on the back of the original form showing the location of the well with reference to roads, railroads, buildings, etc. Use an (X) to indicate location of the well. Show location of nearest existing well(s), if any nearby, by making (O's) and approximate distance between wells. For rig-supply wells, attach a "registered" permit plat (see Section

1.2.8.0.) and for monitoring wells, complete spaces provided for the latitude and longitude of the well location, as well as section, township and range (see Section 1.2.9.0.)

ITEM 11. REMARKS: This space can be used for presenting any other information, such as screen openings, pump information, problems encountered during drilling, name and license number of water-well subcontractors, method and materials used to seal heat pump holes, etc.

ITEM 12. DRILLER'S LOG: List in the space provided a description of the materials encountered and depth. If space on front of the form is insufficient, continue driller's log on reverse side of original form or attach a copy of the driller's log to the original form to be transmitted to the department.

ITEM 13. FOR HEAT PUMP HOLES ONLY: List average depth of holes and number of holes drilled at the site. Indicate type of tubing material used by checking appropriate box. Method and materials used to seal holes shall be stated under item marked "remarks".

ITEM 14. ABANDONMENT INFORMATION: If the well is new, specify whether or not it replaces an existing well. The water well contractor is responsible for informing the owner of the well of state regulations requiring plugging of abandoned wells.

After completing all items, list the name of the water well contracting company and the license number on the spaces provided in the upper right-hand corner of the form. Sign and date the form and mail the original to the Department at the address listed on the form within thirty (30) calendar days after the well has been completed. The owner's copy shall be given to the owner immediately upon completion of the work. The contractor's copy shall be retained by the contractor for his files.

If there are any questions or you need assistance, please call or write to:

Louisiana Department of Transportation and Development
Attn: Chief, Water Resources Section
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245
Telephone (504) 379-1434

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

WATER RESOURCES SECTION

WATER WELL REGISTRATION SHORT FORM (DOTD-GW-1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (Check Appropriate Box)
   ☐ DOMESTIC ☐ RIG SUPPLY ☐ MONITORING ☐ HEAT PUMP SUPPLY
   ☐ HEAT PUMP HOLE ☐ ABANDONED PILOT HOLE ☐ OTHER_____ (please specify)
2. WELL OWNER_____ PHONE ( )_____
3. ADDRESS_____
4. OWNER'S WELL NUMBER OR NAME (If any)_____
5. DATE COMPLETED_____ DEPTH OF HOLE_____FT., DEPTH OF WELL_____FT.
6. STATIC WATER LEVEL_____FT. BELOW GROUND SURFACE MEASURED ON_____ (Date)
7. CASING_____IN. ☐ STEEL OR ☐ PVC SCH._____ LENGTH_____FT.
8. SCREEN_____IN. ☐ STEEL OR ☐ PVC SCH._____ SLOT SIZE_____ LENGTH_____FT.
9. CEMENTED FROM_____FT. TO GROUND SURFACE, USING ☐ PUMP-DOWN METHOD ☐ GRAVITY METHOD
10. LOCATION OF WELL: PARISH_____WELL IS NEAR,_____ (Town) (City)
    APPROXIMATELY_____MILES FROM_____ (Crossroads, Railroad, Any Landmark, etc)
    _____ (Please draw sketch on back of Original)
11. REMARKS:_____
12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION

13. FOR HEAT PUMP HOLES ONLY: AVG. DEPTH_____FT., NUMBER OF HOLES_____
    TUBING MATERIAL ☐ PVC, ☐ PE, ☐ PB, ☐ OTHER_____
14. ABANDONMENT INFORMATION: DOES THE NEW WELL REPLACE AN EXISTING WELL? YES ☐ NO ☐

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Name of Water Well Contractor

LICENSE NUMBER WWC–_____

Authorized Signature Date

MAIL ORIGINAL TO:

LOUISIANA DEPARTMENT OF
TRANSPORTATION AND DEVELOPMENT
ATTN: CHIEF – WATER RESOURCES SECTION
P. O. BOX 94245
BATON ROUGE, LA 70804-9245
(504) 379-1434

FOR OFFICE USE ONLY

STATE 22 (1 2) PARISH (3 5) LOCAL WELL NO. – (6 11)
IDENTIFICATION NUMBER 0 (12 26)
OWNER'S NAME (27 41)
WELL DEPTH FT. (42 45) USE OF WELL (46 47 48)
DATE COM-PLETED MO. YR. (49 52)
OWNER'S NO. (53 56) GEOLOGIC UNIT (57 64)
CONTRACTOR'S NAME
SECTION TOWNSHIP RANGE
HOLE DEPTH FT. ELEV. QUAD. NO.

INSPECTED BY_____
DATE_____
REMARKS_____

APPENDIX IV
INSTRUCTIONS FOR COMPLETING
WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

INSTRUCTIONS FOR COMPLETING WATER WELL

PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

The Water Well Plugging and Abandonment form (DOTD-GW-2) consists of a set of three (3) copies. The first copy (marked DOTD copy) is to be mailed by whoever plugs the well or hole within thirty (30) calendar days after plugging operations have been completed to:

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
Attn: Chief, Water Resources Section
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245

In regard to the other copies of the form, the following procedure shall be followed:

A) If the well is plugged by a water well contractor, he shall retain the second copy of the completed form for his files and shall give the third copy to the owner/lessee immediately upon completion of the plugging operation.

B) If the well is plugged by the owner/lessee (see Section 3.2.3.0.), the second and third copies of the completed form shall be retained by the owner/lessee for his files.

The following explanation will provide clarification of intent and uniformity of reporting:

ITEM 1. OWNER: List the name of the legal owner of the property on which the well is located or the person or company holding a long-term lease on the property. If the owner or lessee is an individual, list first and last names and middle initial of individual.

ADDRESS: The address should be that of the owner. If the well is owned by an industry, the local address of the firm is preferred in order that additional data on the well may be easily obtained by the state or a regional water district or commission.

OWNER'S WELL NUMBER: Many cities, institutions, industrial plants, and large farms have their own system of designating or identifying wells by number an/or name. This information is useful when locating the well and should be entered on the form.

ITEM 2. LOCATION OF WELL: List the parish where the well is located, including the nearest town, city, etc., and give directions to the well site. The location of the well should be described in detail and as accurately as possible so that the well can be easily located by the Department's field inspector. Please draw a sketch on the back of the original form showing the location of the well with reference to roads, railroads, buildings, etc. Use an (X) to indicate location of the well. Show location of nearest existing well(s), if any nearby, by making (O's) and approximate distance between wells. For rig-supply wells, attach a "registered" permit plat (see Section 1.2.8.0.) and for monitoring wells, complete spaces provided for the latitude and longitude of the well location, as well as section, township and range (see Section 1.2.9.0.)

ITEM 3. WELL INFORMATION: Required data are available from water well contractor's or engineer's report.

ITEM 4. Describe, in detail, the method and materials used to plug the well or hole. Give amount of cement, bentonite, and water used. Give any other useful information, such as name of cementing company used, if any, sounded

depth, any obstructions or problems encountered during plugging, size and length of casing removed or left in hole, etc.. If necessary, attach another sheet or use reverse side of form to give details.

ITEM 5. Use this space to present any other pertinent information. For example, if the present owner is different than the person who had the well drilled, give the name of the initial owner in Item 5.

Certification that the work was performed in accordance with applicable rules and regulations must be signed and dated or the form will be returned for proper completion.

If there are any questions, please call or write to:

Louisiana Department of Transportation and Development
Attn: Chief, Water Resources Section
P.O. Box 94245
Baton Rouge, Louisiana 70804-9245
Telephone (504) 379-1434

PLEASE PRINT IN INK
OR TYPE WHEN
COMPLETING THIS FORM

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

WATER RESOURCES SECTION

WATER WELL PLUGGING AND ABANDONMENT FORM (DOTD-GW-2)

MAIL ORIGINAL TO
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
Attn: Chief - Water Resources Section
P. O. BOX 94245
BATON ROUGE, LA 70804-9245
(504) 379-1434

1. WELL OWNER: (If different from owner when drilled, note in item 5) _____

ADDRESS: _____

OWNERS WELL NUMBER (If any) _____

2. LOCATION OF WELL: Parish: _____ Well is Near, _____

Approximately _____ miles from _____
(Crossroads, Town, City, Railroad, Any Landmark, etc.)

(Please draw sketch on back of Original)

3. WELL INFORMATION: Depth of hole, _____ ft., Diameter of casing _____ in., Depth of completed well, _____ ft., Date completed _____ by (Give name of water well contractor who installed well or hole): _____

4. Describe in detail how well or hole was plugged: (materials used, amount of casing and/or screen removed, or left in hole, etc.) _____

REMARKS: _____

I certify that this work was done and completed in accordance with Rules and Regulations of the State on _____, 19____ by (name and no. of contractor _____ WWC- _____

Authorized Signature: _____ Date: _____

SAMPLE ONLY

OFFICE USE ONLY

State	Parish	Local Well No.	Identification Number	Section	Township	Range	Quad. No.
2 2		–	0				
1 2	3 5	6 11	12 30				

DOTD Copy

APPENDIX V
APPLICATIONS FOR LOUISIANA
WATER WELL CONTRACTOR'S (DRILLER'S) LICENSE

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
P. O. BOX 94245 BATON ROUGE, LA. 70804-9245
Telephone (504) 379-1434

For Office Use Only
License No. WWC_____

APPLICATION FOR LOUISIANA
WATER WELL CONTRACTOR'S (DRILLER'S) LICENSE

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

APPLICANT: Name _____ Birthdate: _____
Mailing Address _____
City, State, Zip _____
Social Security Number _____
Telephone No. and Area Code _____
BUSINESS: Firm's Name (to appear on license) _____
Located at _____
City, State, Zip _____
Telephone No. and Area Code _____
TYPE OF BUSINESS: Water Well _____, Monitoring Well _____, Heat Pump Well or Hole _____,
(Check one or more) Geotechnical Borehole _____, Plugging Well or Hole _____, Other ____
EXPERIENCE RECORD:
(a) Date started drilling: _____
(b) Approximate number of wells or holes drilled during the last calendar year: _____
(c) Depth of deepest well or hole actually drilled during career, in feet: _____
(d) Largest well or hole drilled during career, in inches: _____
(e) Are you presently licensed by another state? Yes ___ No ___. If yes, name State ____
(f) If previously licensed, has your drilling li- e ever been revoked or suspended by any State? Yes___, No ___, Not Applicabl- . If yes, please explain the details on separate sheet.

DESCRIPTION OF DRILLING EQUIPMENT:
Drilling Rig Make Capacity eet) Owned or Leased
_____ _____
_____ _____

REFERENCE: List two licensed familiar with your work experience.
(1) _____ _____
(Name) (Mailing Address) (License No.)
(2) _____ _____
(Name) (Mailing Address) (License No.)
Do you or your company have liability insurance? Yes ____ No ____. If yes, in what amount $_____. Name of Insurer: _____ Date Expires_____

I affirm that I have two years of drilling experience under the supervision of a licensed water well contractor or other comparable drilling experience acceptable to the Department. My drilling experience was with _____
(Name) (Mailing Address) (Telephone No.)
from the time period _____ to _____. (Additional experience may be listed on the reverse side of this form.)

I hereby grant my references and insurer the authority to provide the Louisiana Department of Transportation and Development with information necessary to establish my qualification for a driller's license. Yes _____ No _____.

I also affirm that I meet qualifications for a license as spelled out in R.S.38:3098 through 38:3098.8 and that I will fully comply with all rules and regulations for wells and holes promulgated and to be promulgated by the Louisiana Department of Transportation and Development, Office of Public Works. Yes _____ No _____.

Enclosed is check or money order no. _____ dated _____ in the amount of $_____ for license fee, made payable to the Department of Transportation & Development.

CERTIFICATE:

STATE OF LOUISIANA
PARISH OF _____

BEFORE ME, the undersigned authority, a Notary Public duly commissioned and qualified within and for the State and Parish aforesaid, personally came and appeared _____, who being by me first duly sworn, did depose and say: That the information contained and set forth in the above and foregoing APPLICATION FOR LOUISIANA WATER WELL CONTRACTOR'S LICENSE is true and correct, to the best of my knowledge, as stated herein.

_____
APPLICANT

Sworn to and subscribed to before me this _____ day of _____,198__
at _____, Louisiana.

_____
NOTARY PUBLIC

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
P. O. BOX 94245 BATON ROUGE, LA. 70804-9245
Telephone (504) 379-1434

APPLICATION FOR RENEWAL OF

LOUISIANA

WATER WELL CONTRACTOR'S (DRILLER'S) LICENSE

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

APPLICANT:

NAME _____

MAILING ADDRESS _____

CITY, STATE, ZIP _____

SOCIAL SECURITY NO. _____

TELEPHONE NO. AND AREA CODE _____

BUSINESS:

FIRM'S NAME _____

LOCATED AT _____

CITY, STATE, ZIP _____

LICENSE NO. WWC-_____

TELEPHONE NO. AND AREA CODE _____

DRILLING RECORD:

For categories listed below, indicate the total number of wells or holes which you (your company) drilled and/or plugged during the past twelve months:

Category	No. Drilled	No. Plugged
a) Domestic water wells		
b) All other types of water wells		
c) Monitoring wells		
d) Heat pump holes		
e) Geotechnical boreholes		

RENEWAL FEE:

Enclosed is check or money order number _____ in the amount of $_____ for my annual renewal fee.

NOTE:

Your annual renewal fee is $100.00, unless you drill only domestic water wells (as defined in Appendix I) and you drill less than 25 domestic wells annually, in which case the renewal fee is $50.00.

I certify that the information contained and set forth in the above and foregoing application for renewal of Louisiana water well contractor's license is true and correct, to the best of my knowledge, as stated herein.

_____
Signature

_____
Date